Algebra II Lesson #4 Unit 4
Class Worksheet #4
For Worksheet #4

Algebra II   Applying Systems of Linear Inequalities

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In this unit, you have learned how to graph systems of linear inequalities. In each case the graph of the 'solution set' was a convex polygon. In this lesson, we will explore applications of systems of linear inequalities with two variables. Consider the following example.

Algebra II Applying Systems of Linear Inequalities

A farming family wishes to plant some barley and some wheat.

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A farming family wishes to plant some barley and some wheat. They can plant a maximum of 100 acres of barley and a maximum of 80 acres of wheat.

Algebra II   Applying Systems of Linear Inequalities

A farming family wishes to plant some barley and some wheat. They can plant a maximum of 100 acres of barley and a maximum of 80 acres of wheat. However, they only have 120 acres of land available for planting.

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A farming family wishes to plant some barley and some wheat. They can plant a maximum of 100 acres of barley and a maximum of 80 acres of wheat. However, they only have 120 acres of land available for planting. Barley costs $20 per acre for seeds,

Algebra II Applying Systems of Linear Inequalities

A farming family wishes to plant some barley and some wheat. They can plant a maximum of 100 acres of barley and a maximum of 80 acres of wheat. However, they only have 120 acres of land available for planting. Barley costs $20 per acre for seeds, and wheat costs $30 per acre for seeds.

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A farming family wishes to plant some barley and some wheat. They can plant a maximum of 100 acres of barley and a maximum of 80 acres of wheat. However, they only have 120 acres of land available for planting. Barley costs \$20 per acre for seeds, and wheat costs \$30 per acre for seeds. However, they only have \$3000 available for seed costs.

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A farming family wishes to plant some barley and some wheat. They can plant a maximum of 100 acres of barley and a maximum of 80 acres of wheat. However, they only have 120 acres of land available for planting. Barley costs $20 per acre for seeds, and wheat costs $30 per acre for seeds. However, they only have $3000 available for seed costs. They expect a harvest of 1000 pounds per acre of barley and 3000 pounds per acre of wheat.

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A farming family wishes to plant some barley and some wheat. They can plant a maximum of 100 acres of barley and a maximum of 80 acres of wheat. However, they only have 120 acres of land available for planting. Barley costs $20 per acre for seeds, and wheat costs $30 per acre for seeds. However, they only have $3000 available for seed costs. They expect a harvest of 1000 pounds per acre of barley and 3000 pounds per acre of wheat. How many acres of each crop should they plant

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Let x represent the number of acres of barley they plant,

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Let x represent the number of acres of barley they plant, and let y represent the number of acres of wheat they plant.

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Let x represent the number of acres of barley they plant, and let y represent the number of acres of wheat they plant.

	Number of Acres
Barley	x
Wheat	y

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	Number of Acres
Barley	x
Wheat	y

$x \leq$

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	Number of Acres
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$x \le 100$

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Wheat	y	30y

Clearly, x and y represent non-negative quantities.

$$x \leq 100$$

$$y \leq 80$$

$$x + y \leq 120$$

$$20x + 30y \leq 3000$$

$$x \geq 0 \quad y \geq 0$$

Algebra II   Applying Systems of Linear Inequalities

A farming family wishes to plant some barley and some wheat. They can plant a maximum of 100 acres of barley and a maximum of 80 acres of wheat. However, they only have 120 acres of land available for planting. Barley costs \$20 per acre for seeds, and wheat costs \$30 per acre for seeds. However, they only have \$3000 available for seed costs. They expect a harvest of 1000 pounds per acre of barley and 3000 pounds per acre of wheat. How many acres of each crop should they plant to maximize their total harvest?

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Barley	x	20x
Wheat	y	30y

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	Number of Acres	Seed Cost ($)
Barley	x	$20x$
Wheat	y	$30y$

This system of linear inequalities

$$x \le 100$$
$$y \le 80$$
$$x + y \le 120$$
$$20x + 30y \le 3000$$
$$x \ge 0 \qquad y \ge 0$$

Algebra II Applying Systems of Linear Inequalities

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	Number of Acres	Seed Cost ($)
Barley	x	$20x$
Wheat	y	$30y$

This system of linear inequalities is called the <u>system of constraints</u> for this problem.

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$$y \leq 80$$
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Algebra II Applying Systems of Linear Inequalities

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This system of linear inequalities is called the <u>system of constraints</u> for this problem. We will graph this system.

Algebra II Applying Systems of Linear Inequalities

$$x \le 100$$
$$y \le 80$$
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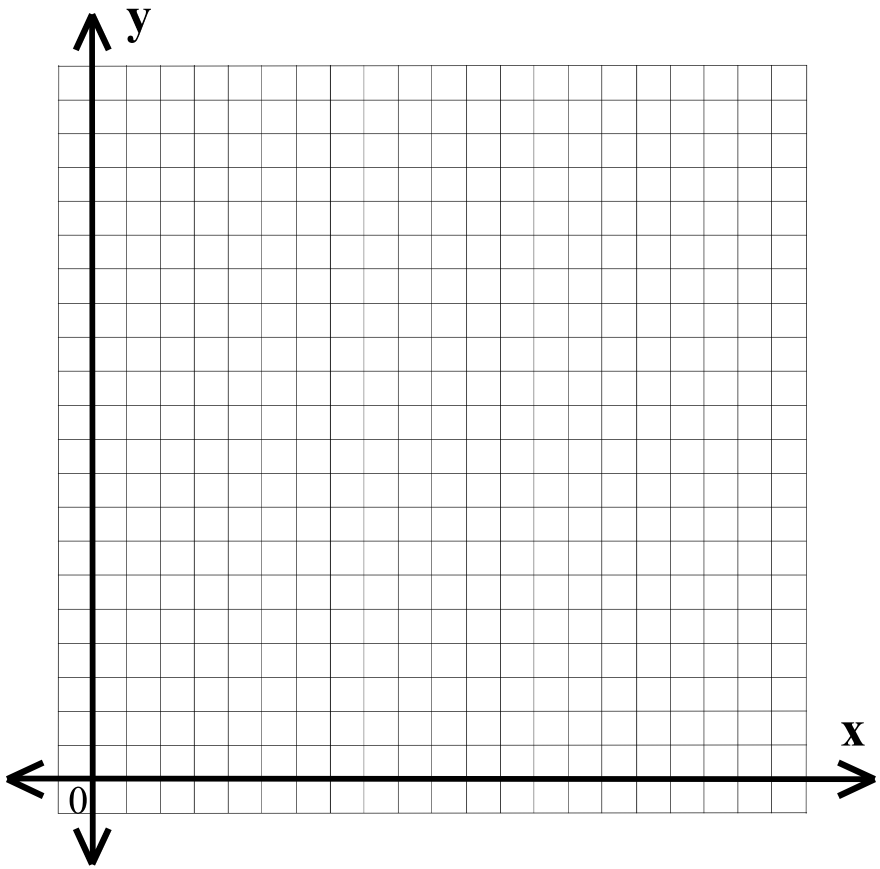
$$20x + 30y \le 3000$$
$$x \ge 0 \qquad y \ge 0$$



Algebra II   Applying Systems of Linear Inequalities

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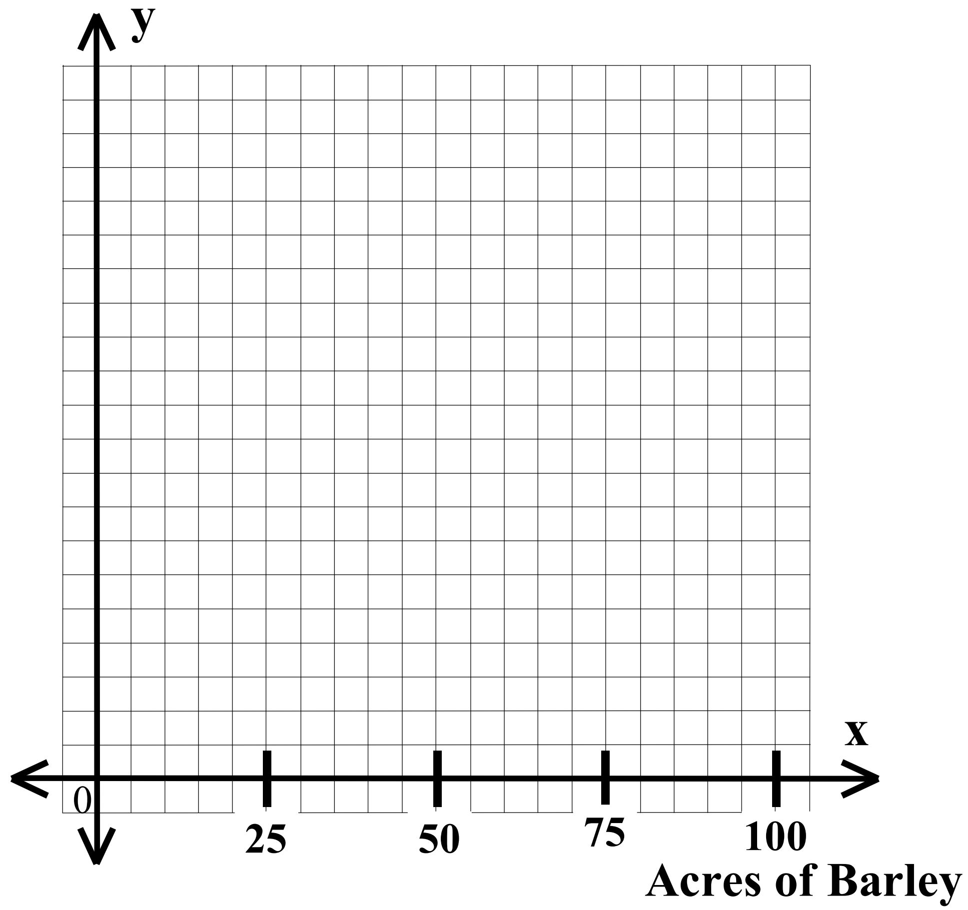

Algebra II   Applying Systems of Linear Inequalities

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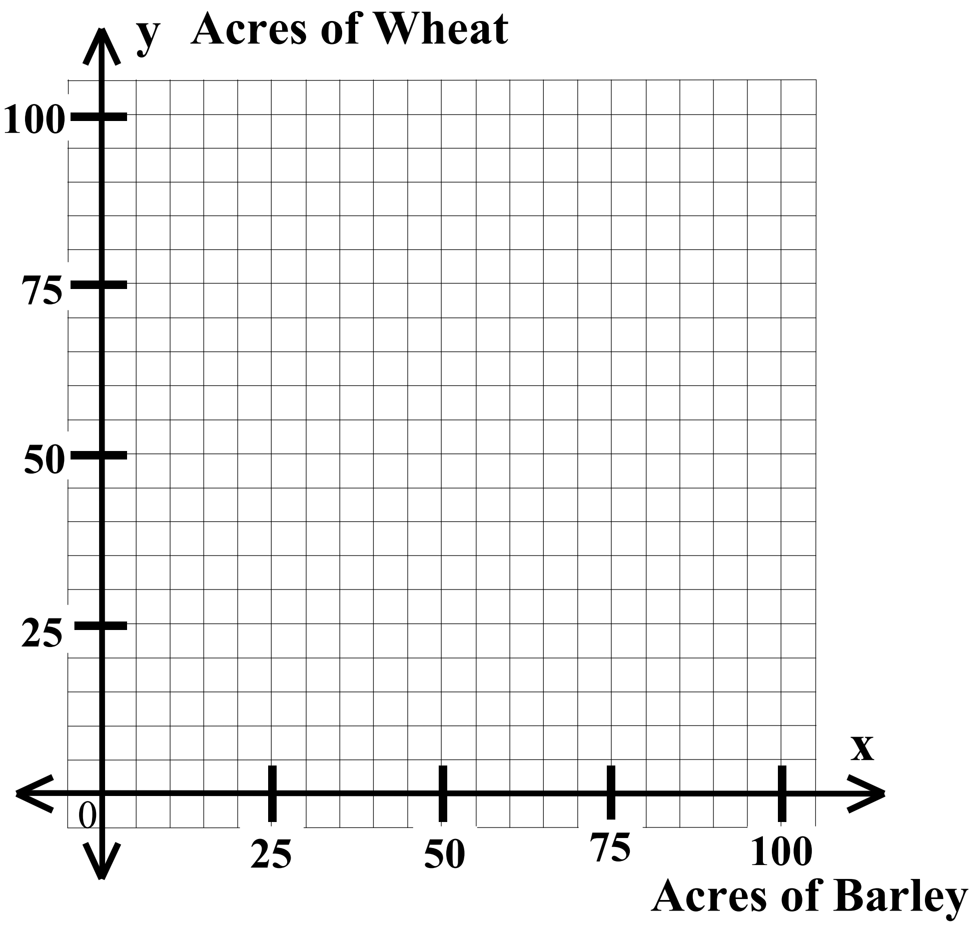

Algebra II Applying Systems of Linear Inequalities

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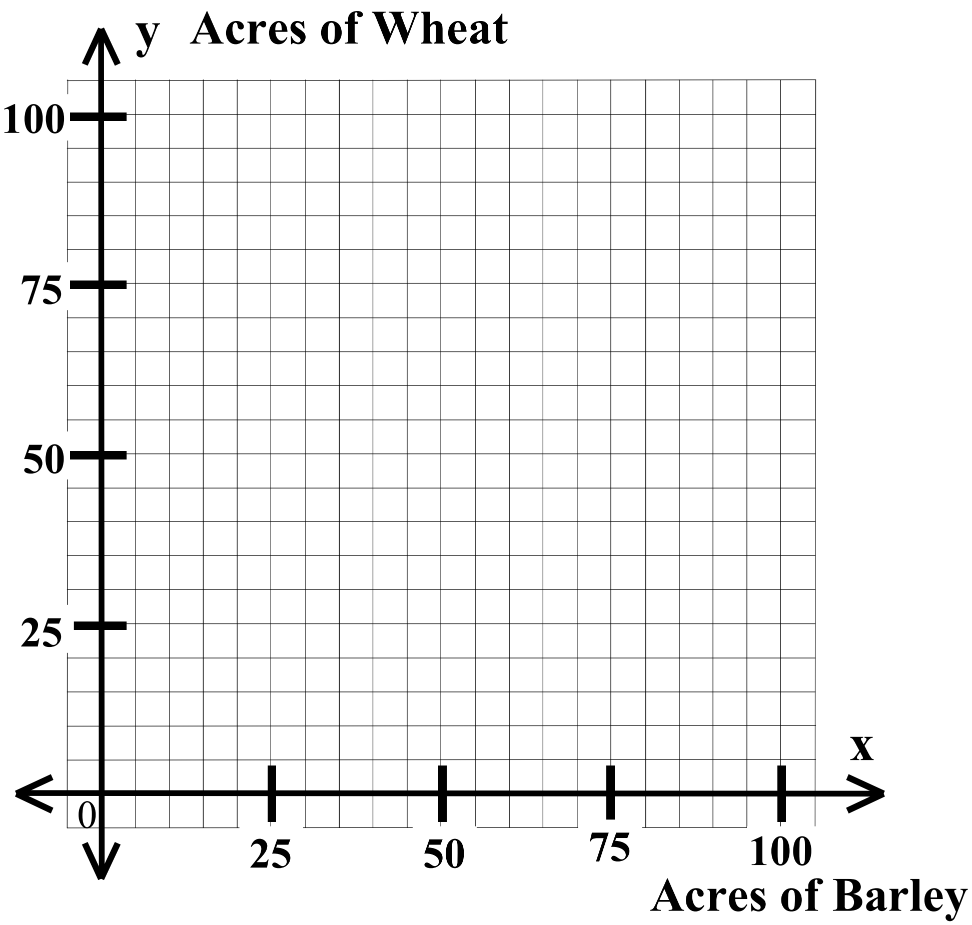

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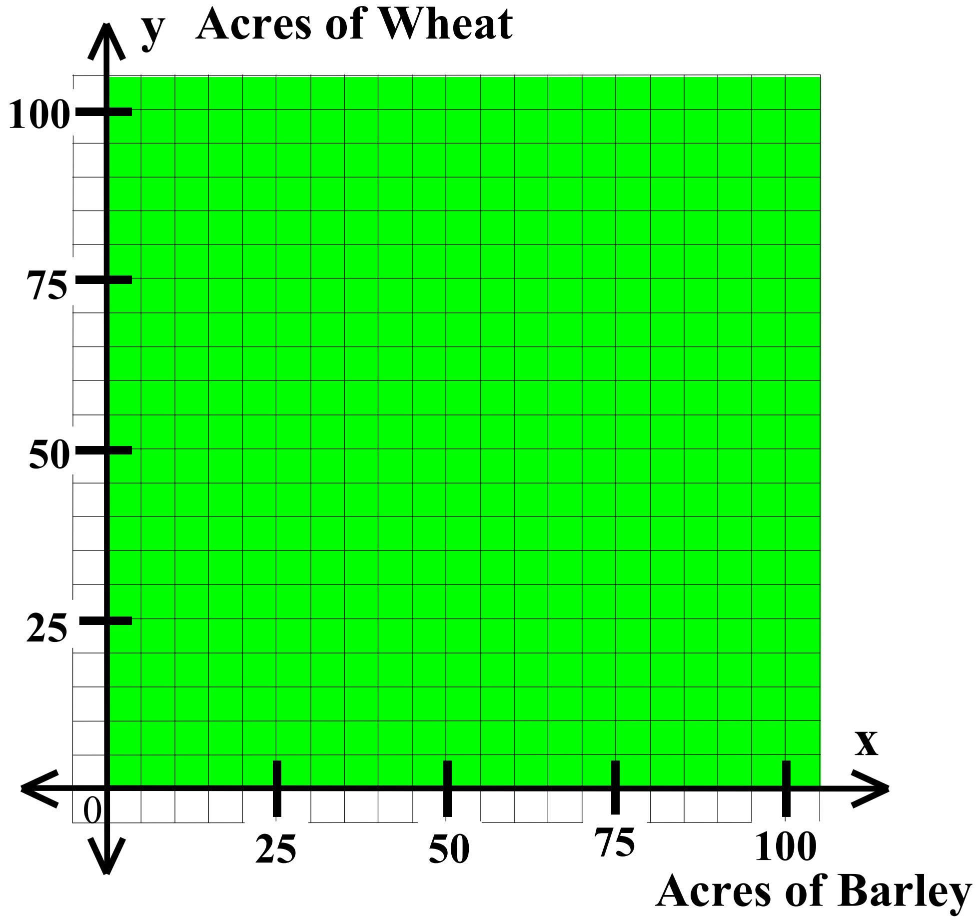

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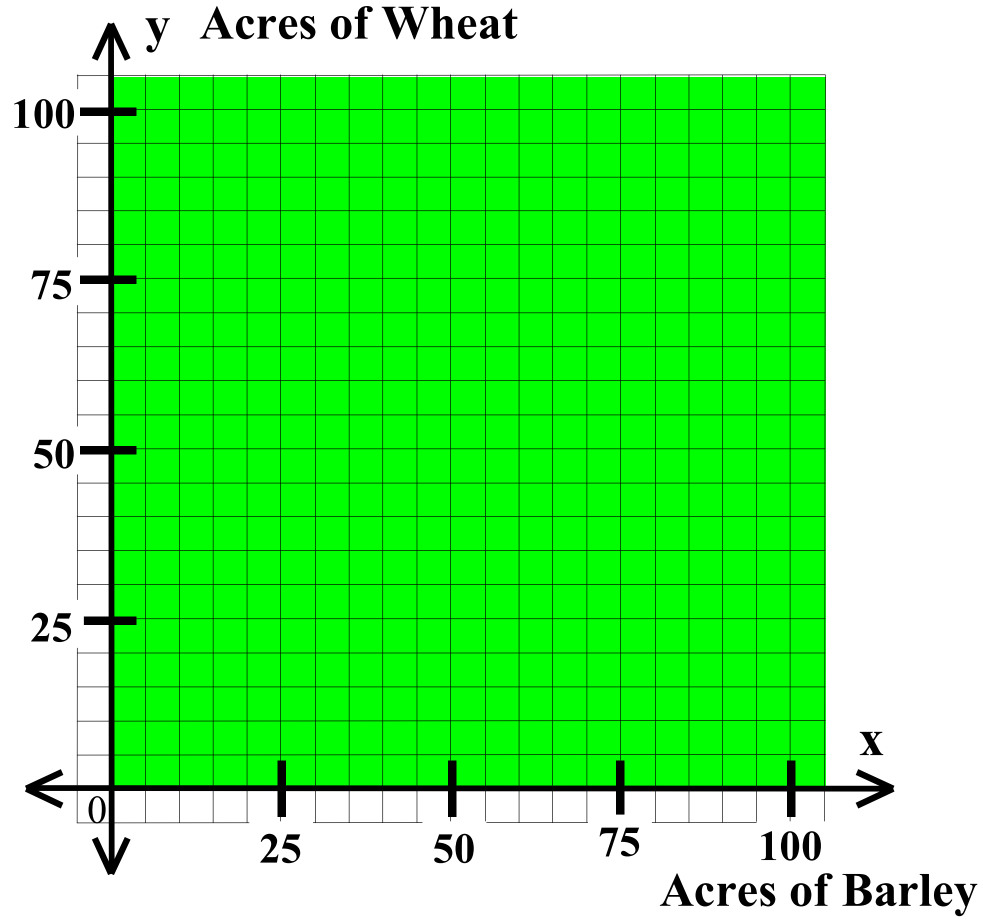

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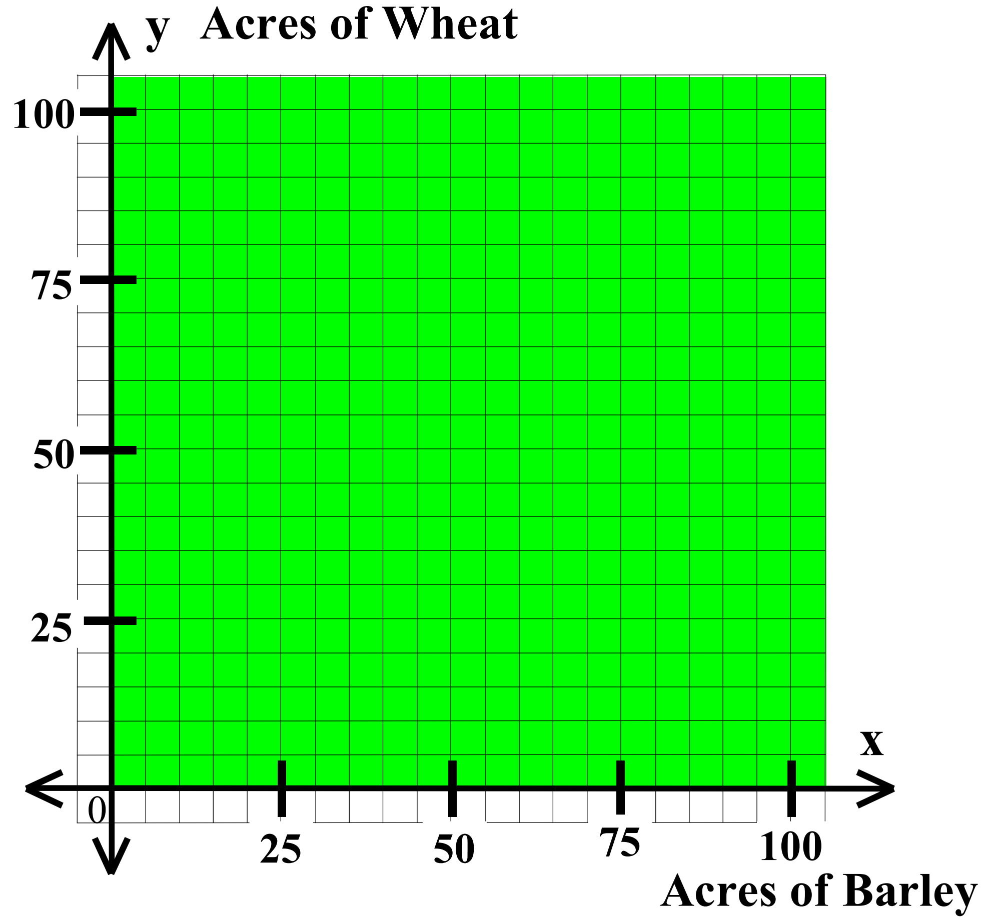

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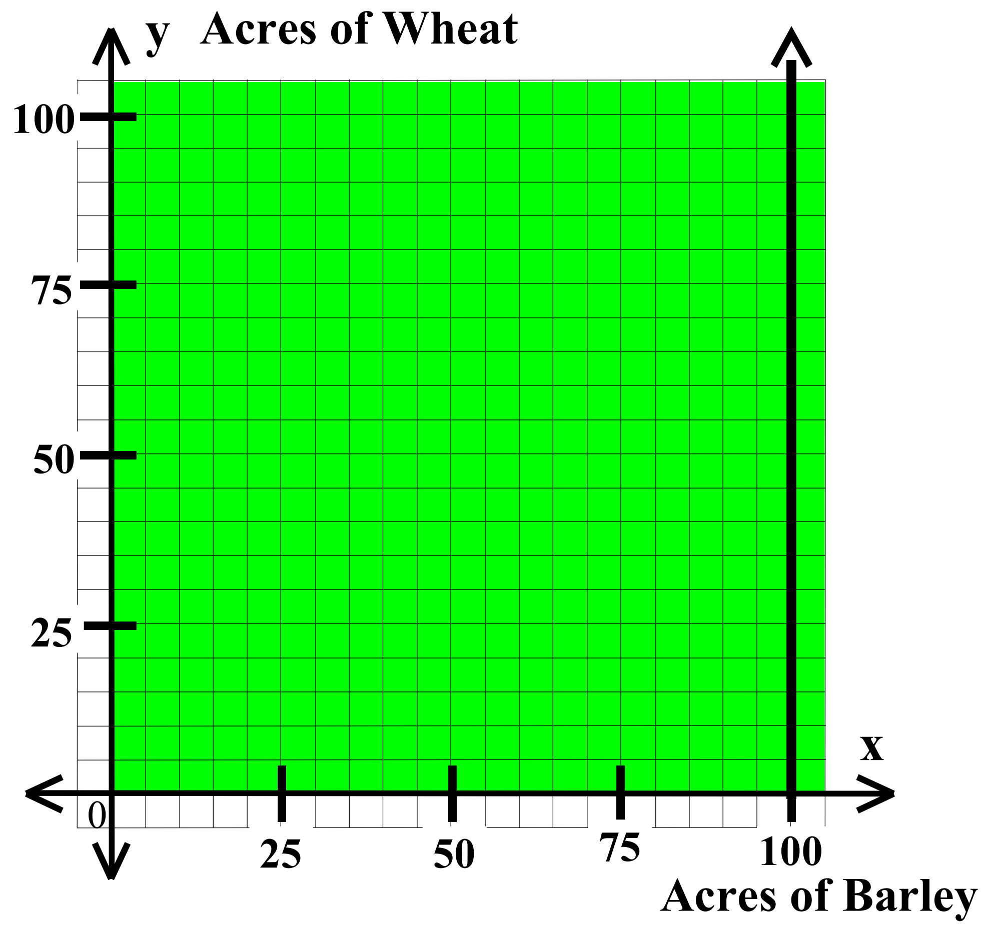

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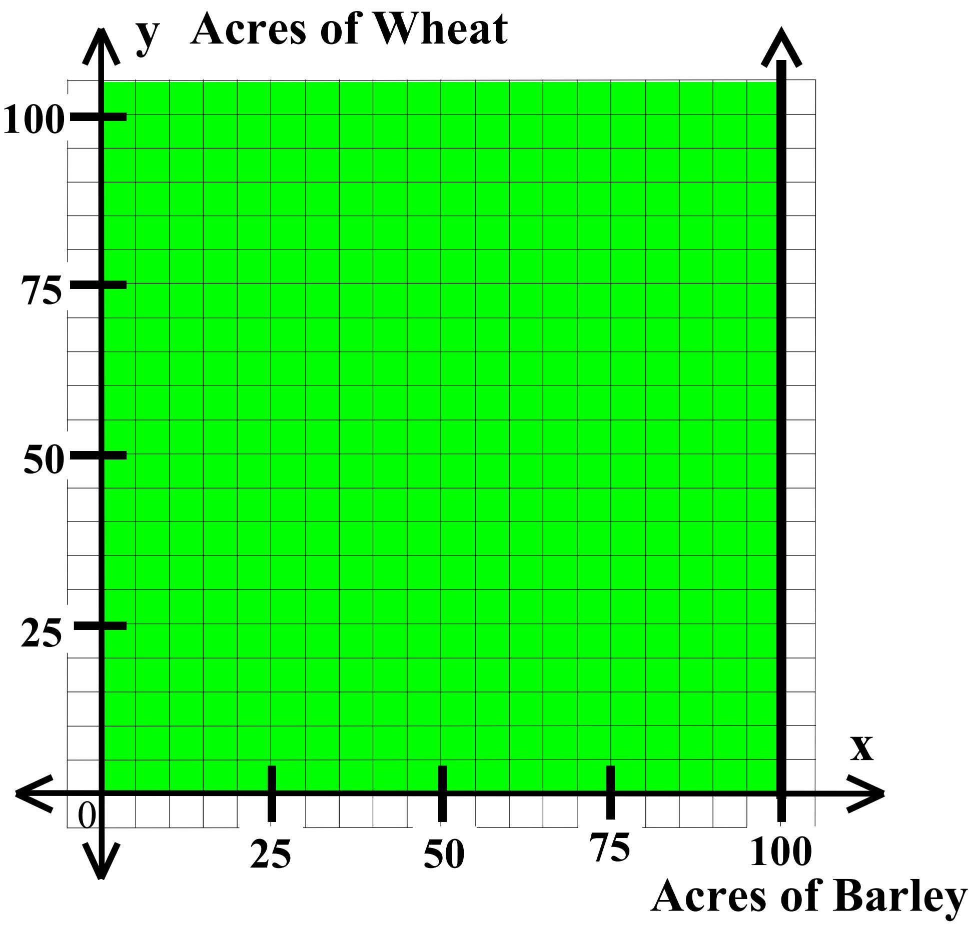

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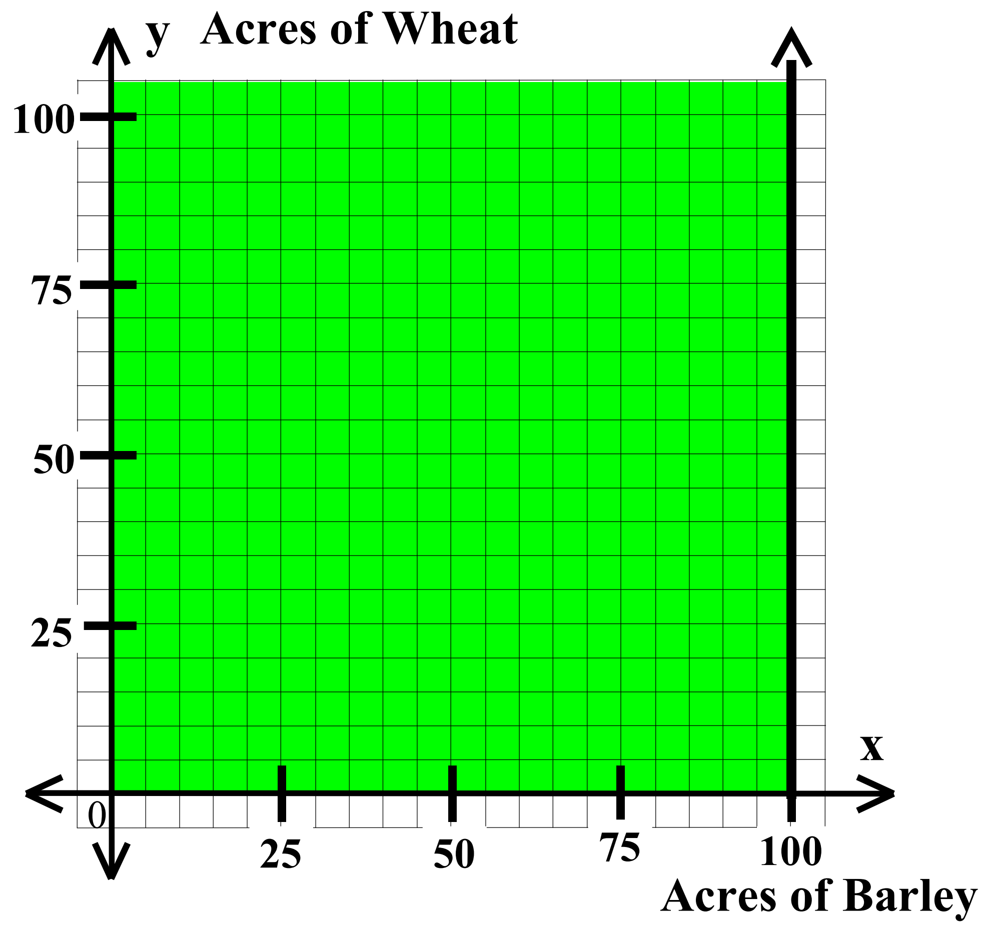

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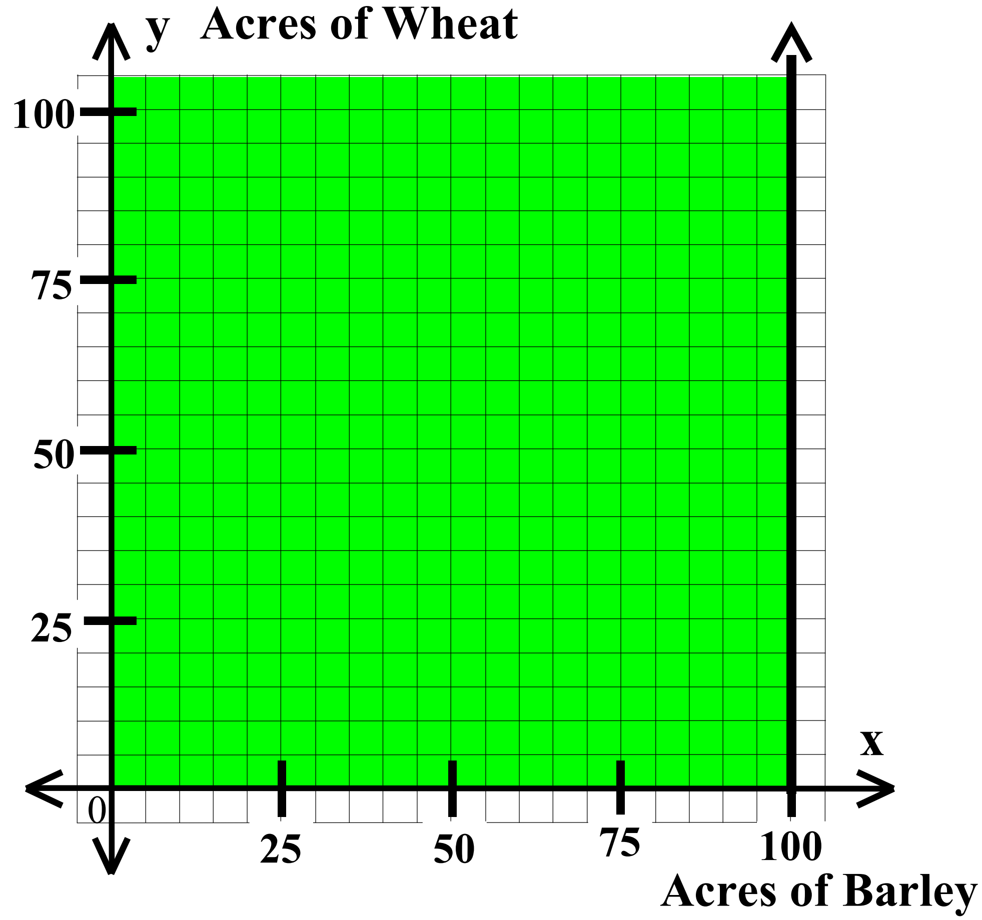

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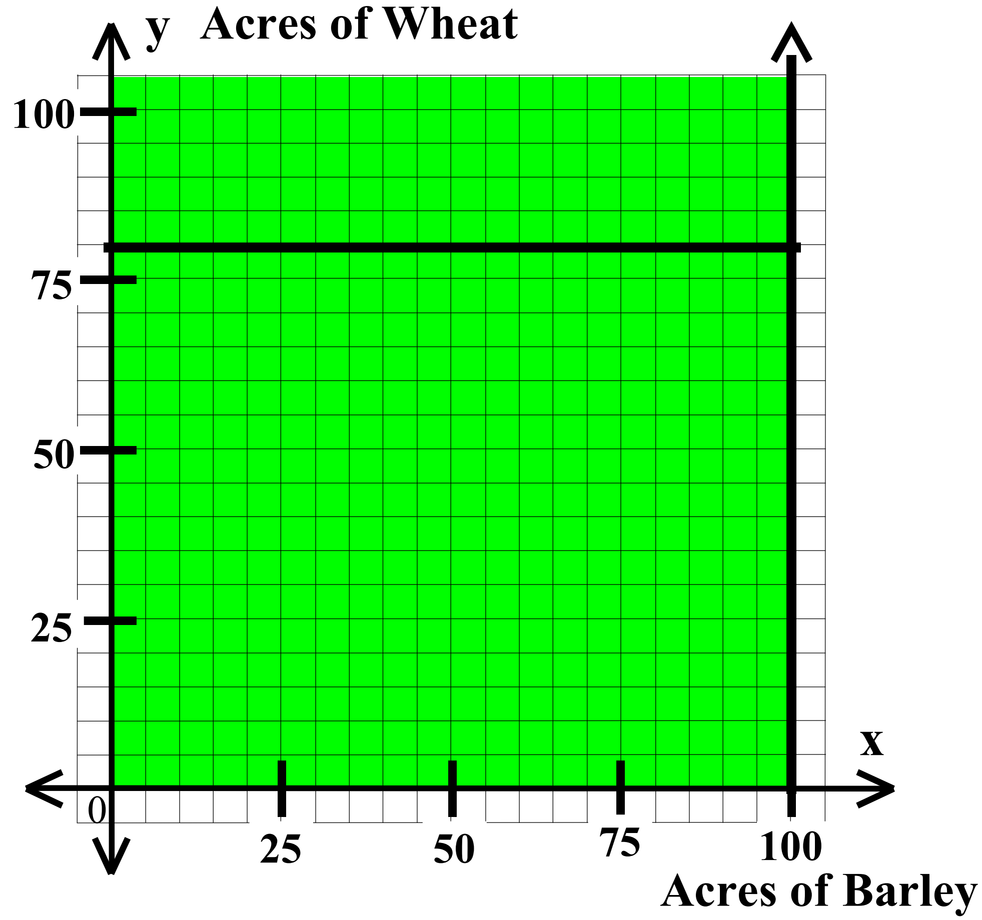

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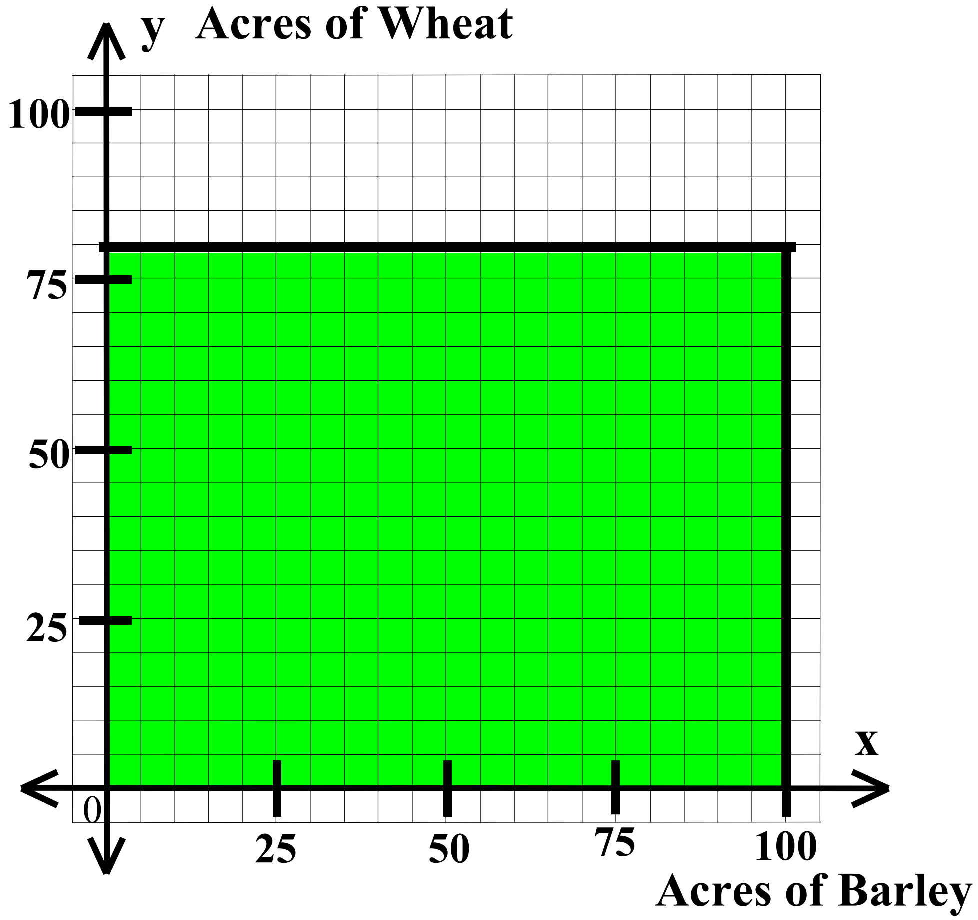

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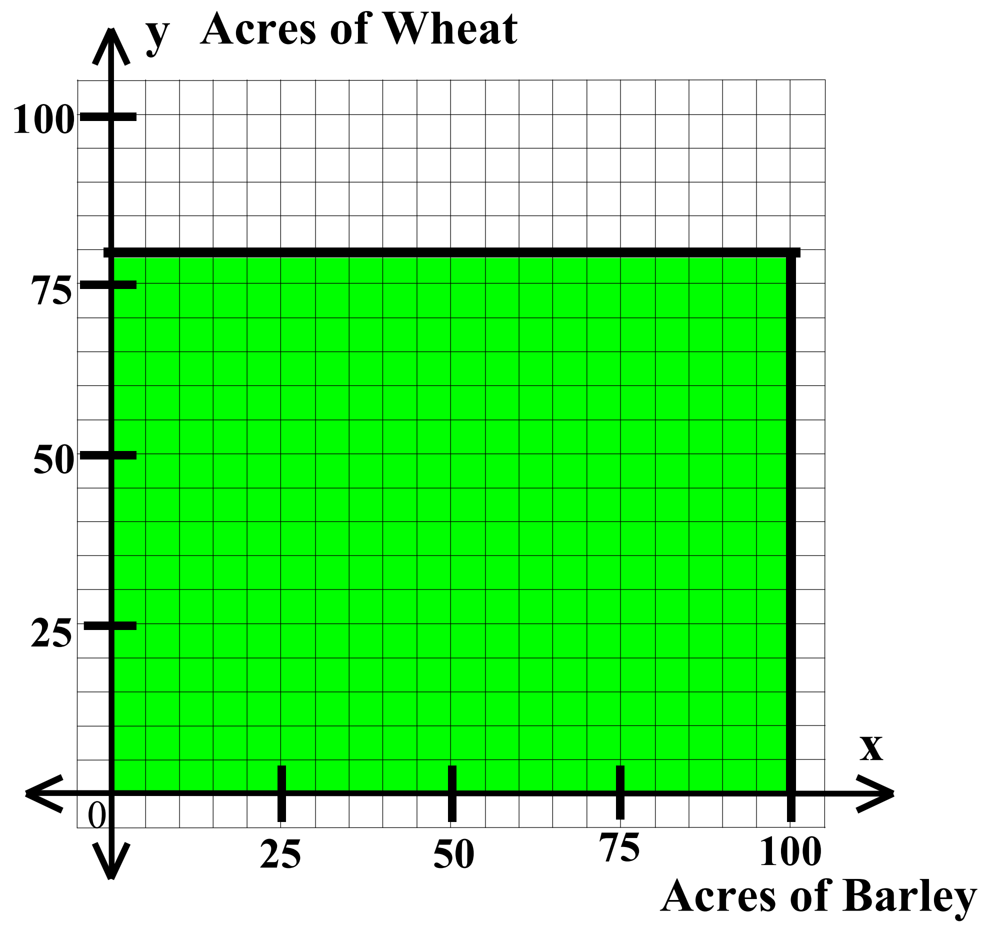

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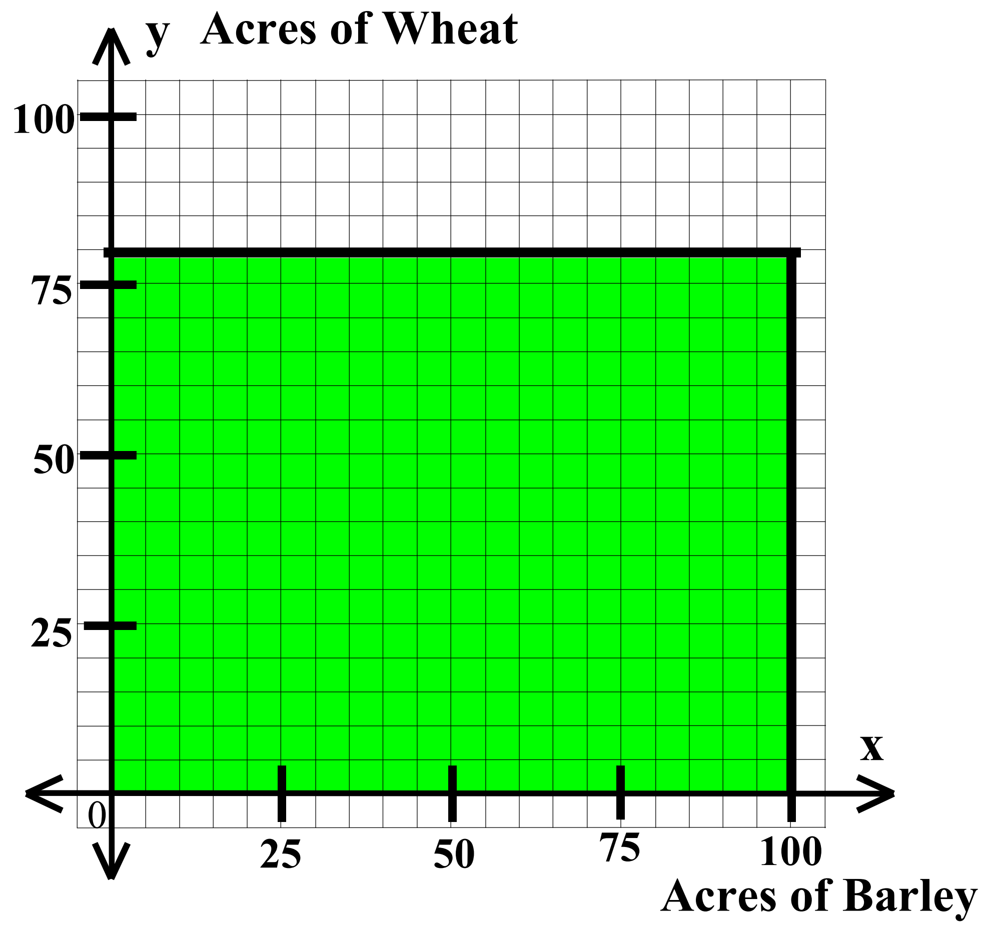

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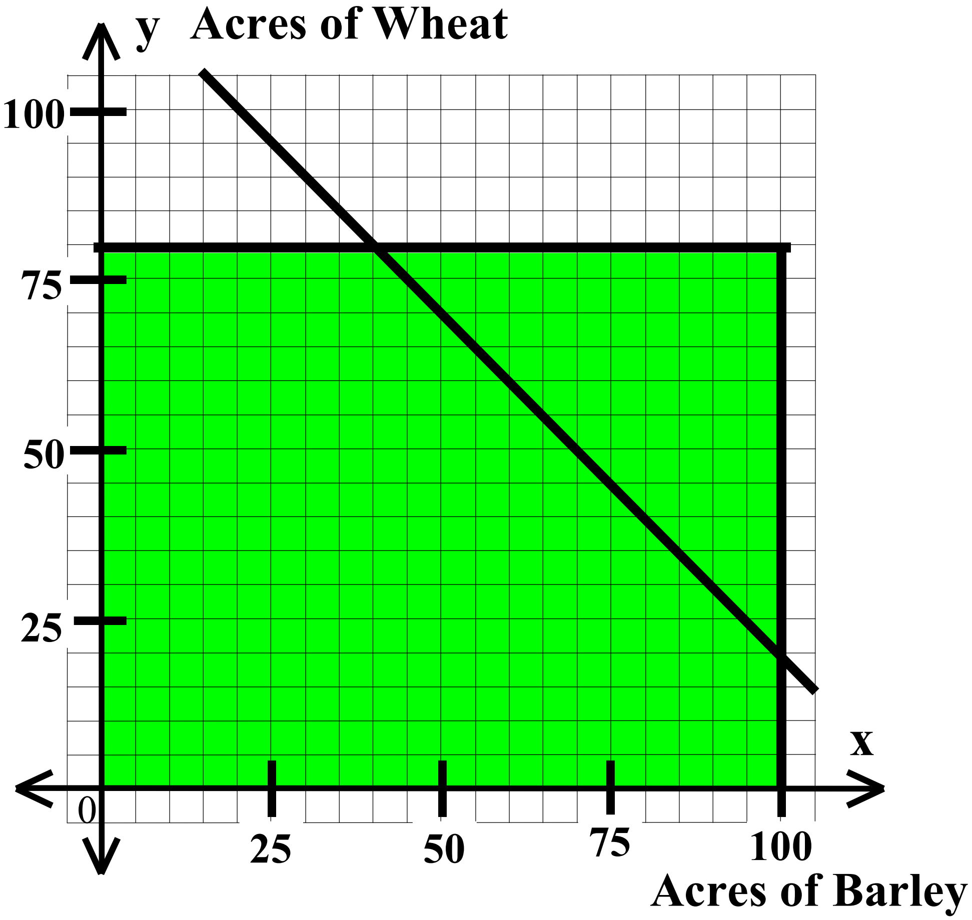

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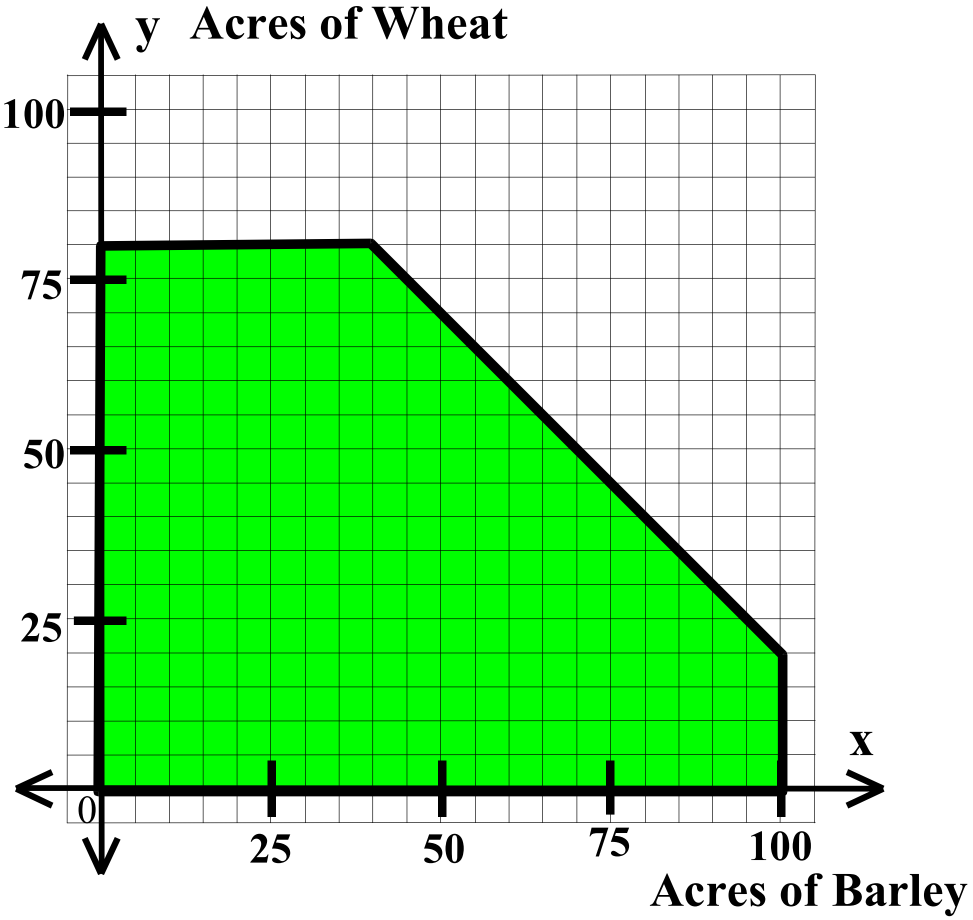

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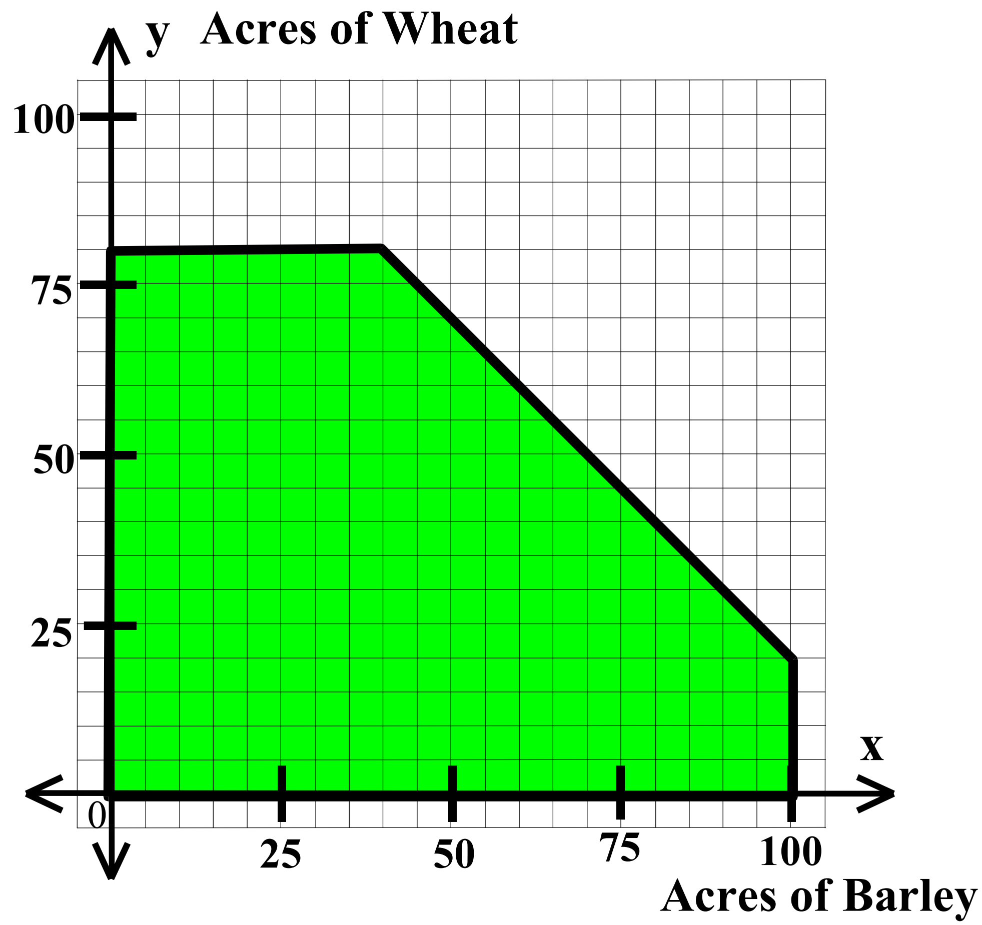

Algebra II   Applying Systems of Linear Inequalities

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$y \leq 80$

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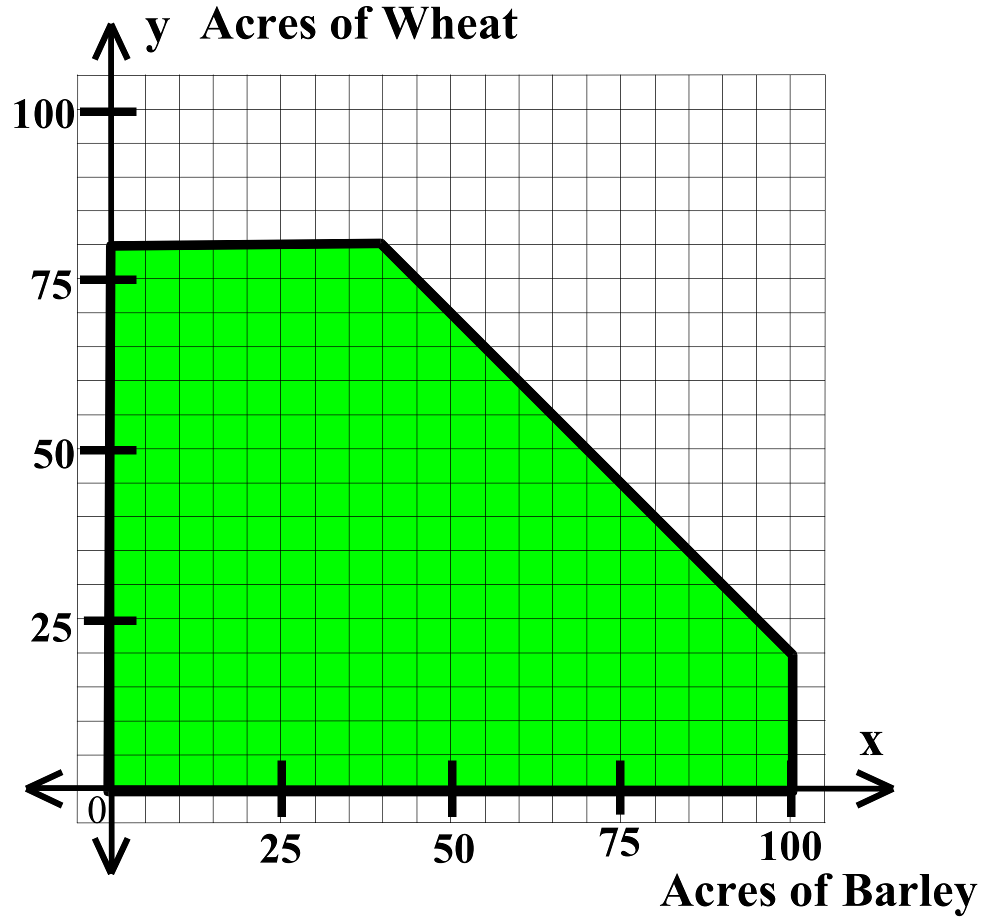


Algebra II Applying Systems of Linear Inequalities

$x \leq 100$

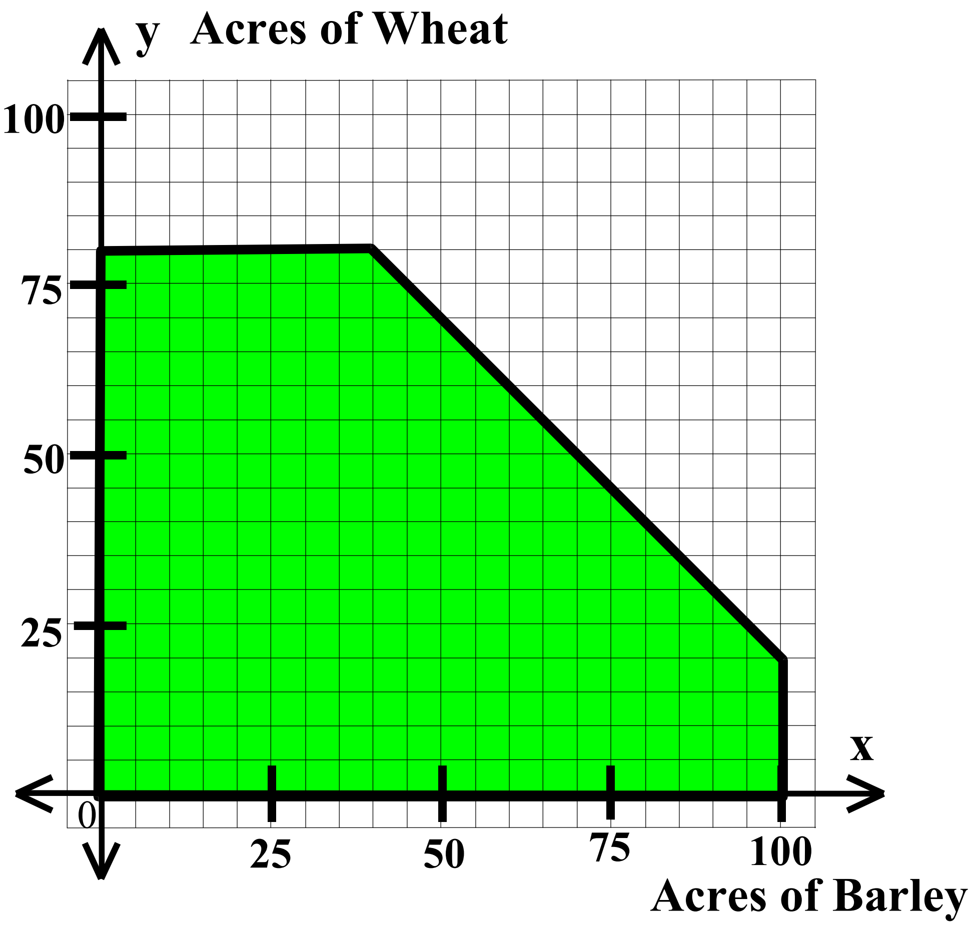
$y \leq 80$

$x + y \leq 120$

$20x + 30y \leq 3000$

$x \geq 0 \qquad y \geq 0$

$30y$



Algebra II Applying Systems of Linear Inequalities

$x \leq 100$

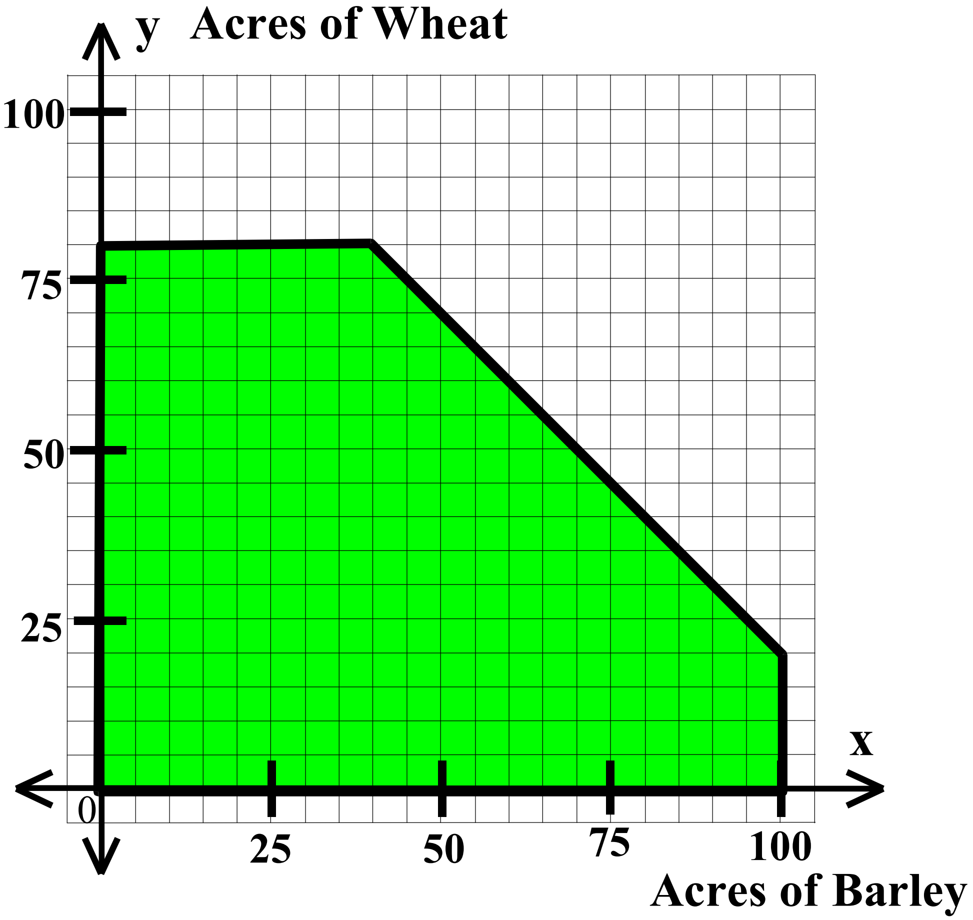
$y \leq 80$

$x + y \leq 120$

$20x + 30y \leq 3000$

$x \geq 0 \qquad y \geq 0$

$30y \leq$



Algebra II Applying Systems of Linear Inequalities

$x \leq 100$

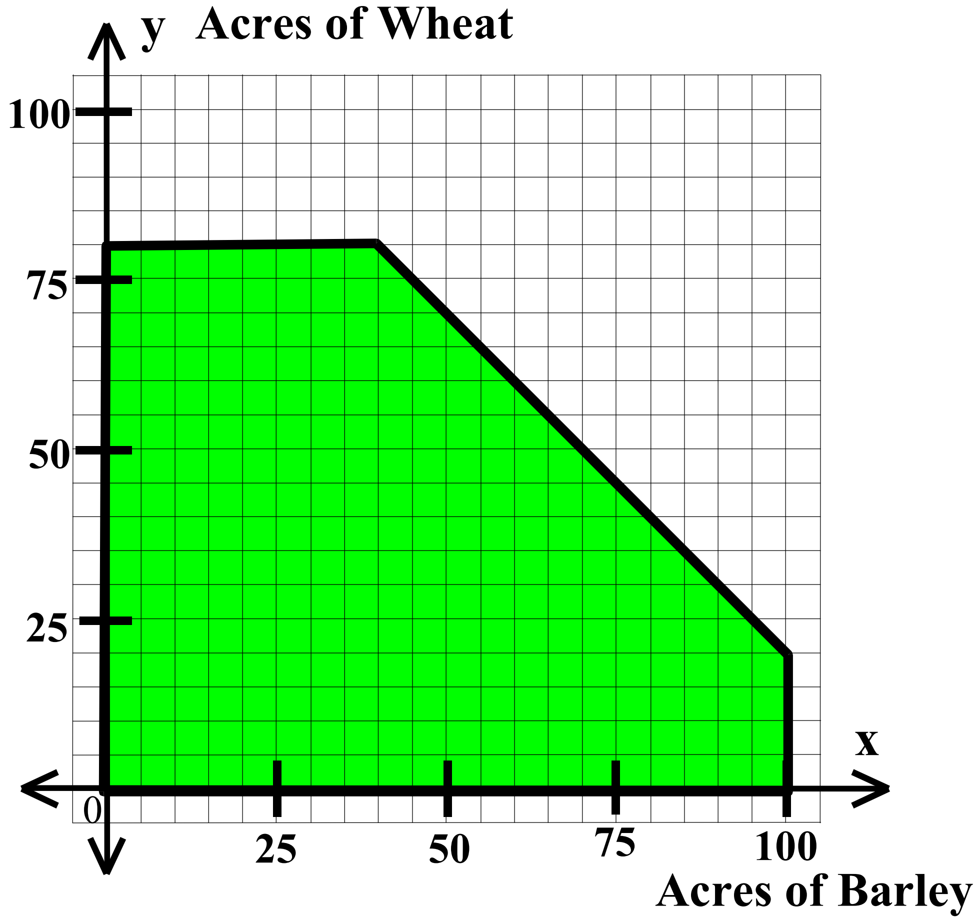
$y \leq 80$

$x + y \leq 120$

$20x + 30y \leq 3000$

$x \geq 0 \quad y \geq 0$

$30y \leq -20x$



Algebra II Applying Systems of Linear Inequalities

$x \le 100$

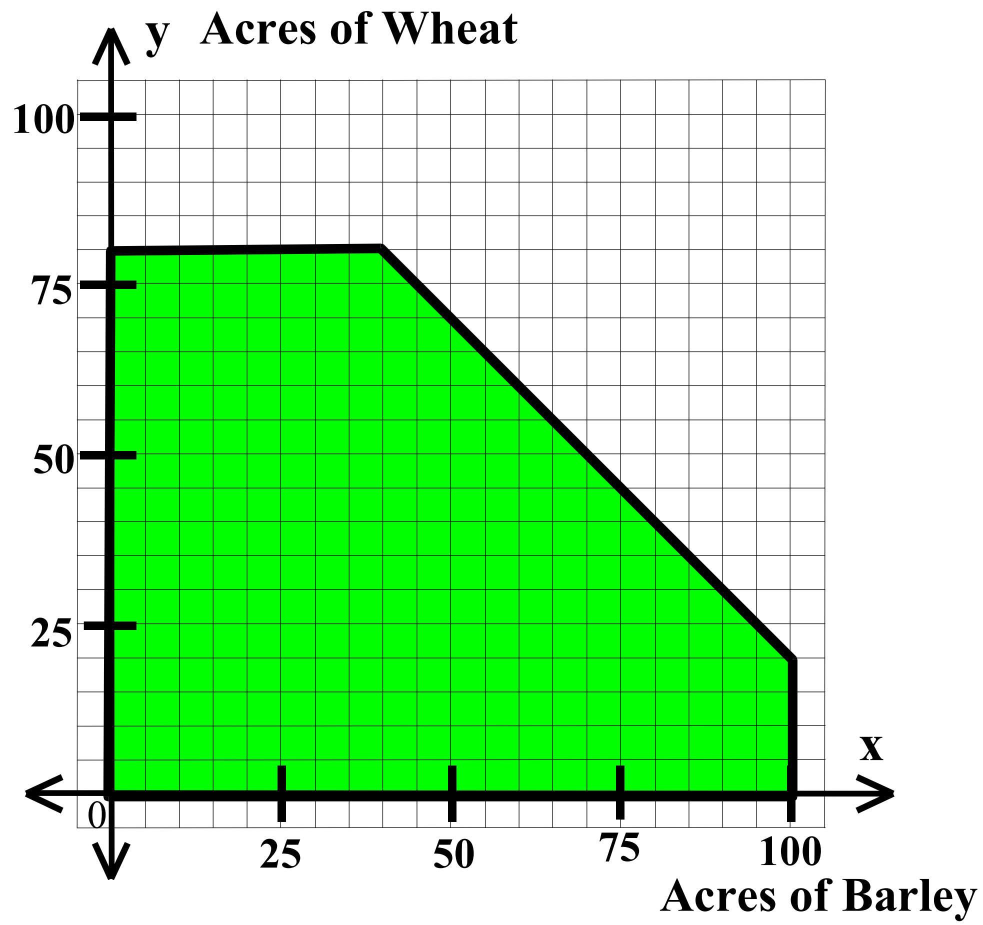
$y \le 80$

$x + y \le 120$

$20x + 30y \le 3000$

$x \ge 0 \qquad y \ge 0$

$30y \le -20x +$



Algebra II   Applying Systems of Linear Inequalities

$x \le 100$

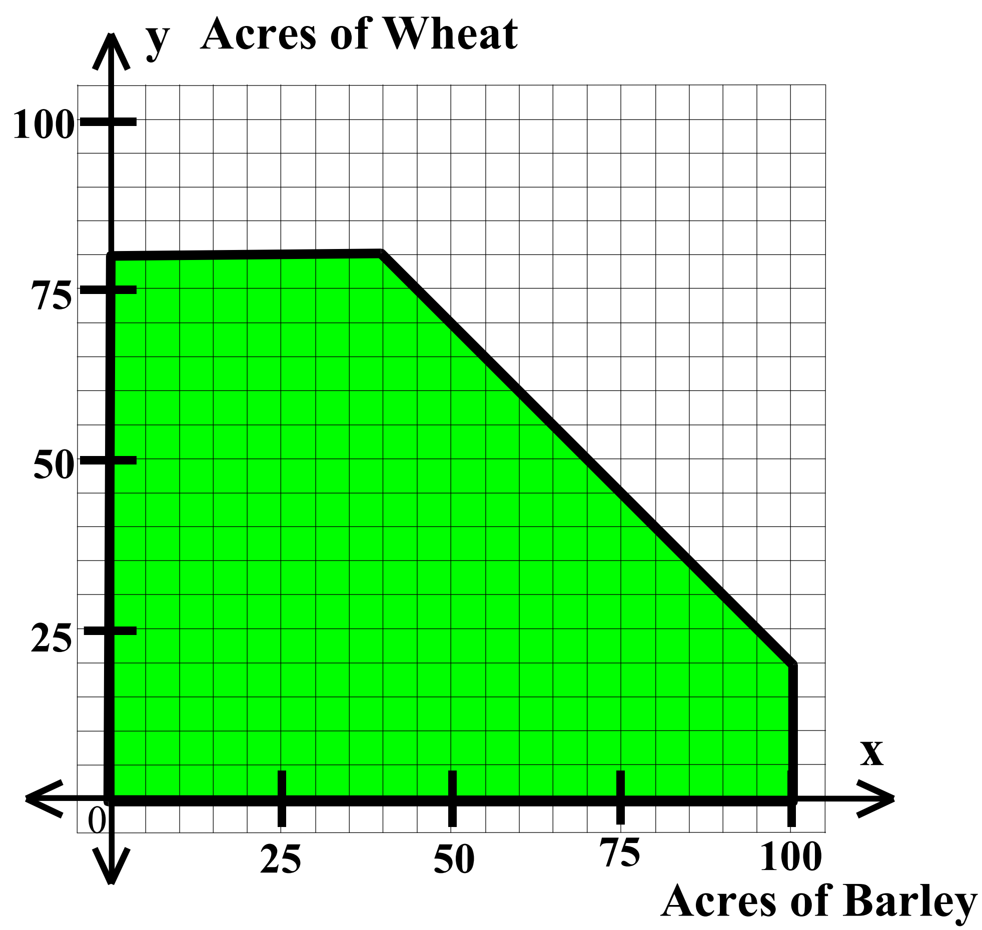
$y \le 80$

$x + y \le 120$

$20x + 30y \le 3000$

$x \ge 0 \qquad y \ge 0$

$30y \le -20x + 3000$



Algebra II   Applying Systems of Linear Inequalities

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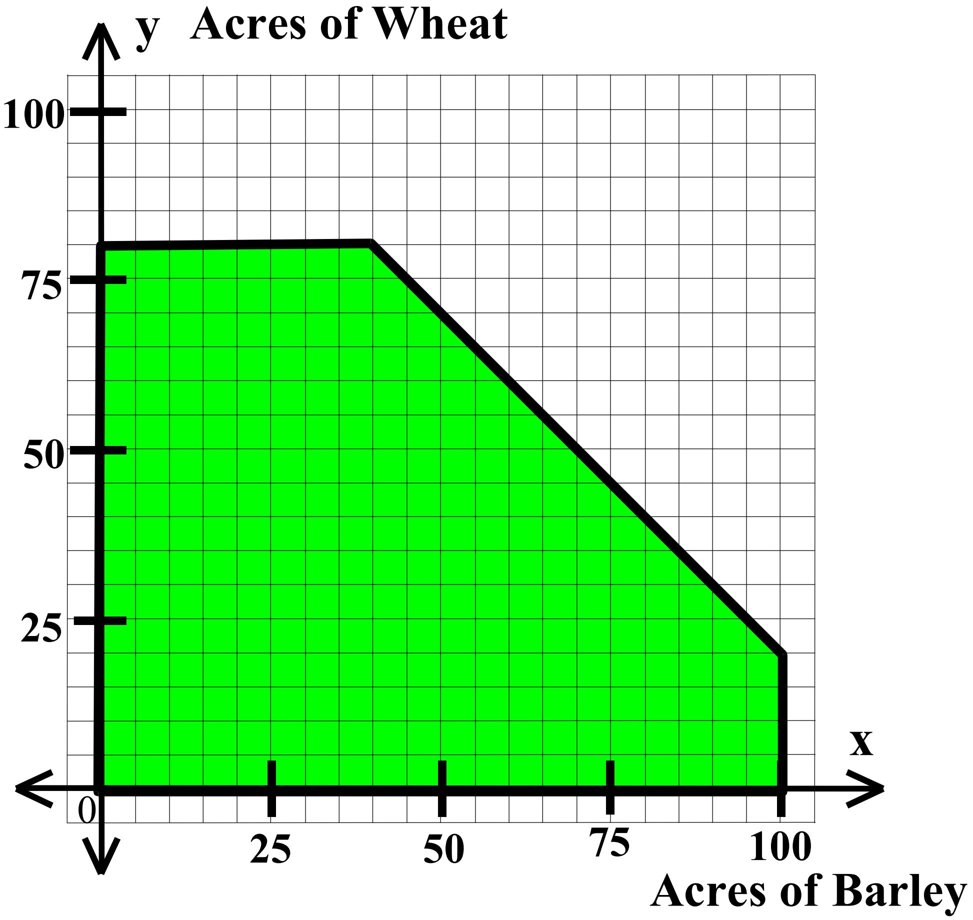
$20x + 30y \le 3000$
$x \ge 0 \quad y \ge 0$



$30y \le -20x + 3000$

y

Algebra II   Applying Systems of Linear Inequalities

$x \le 100$

$y \le 80$

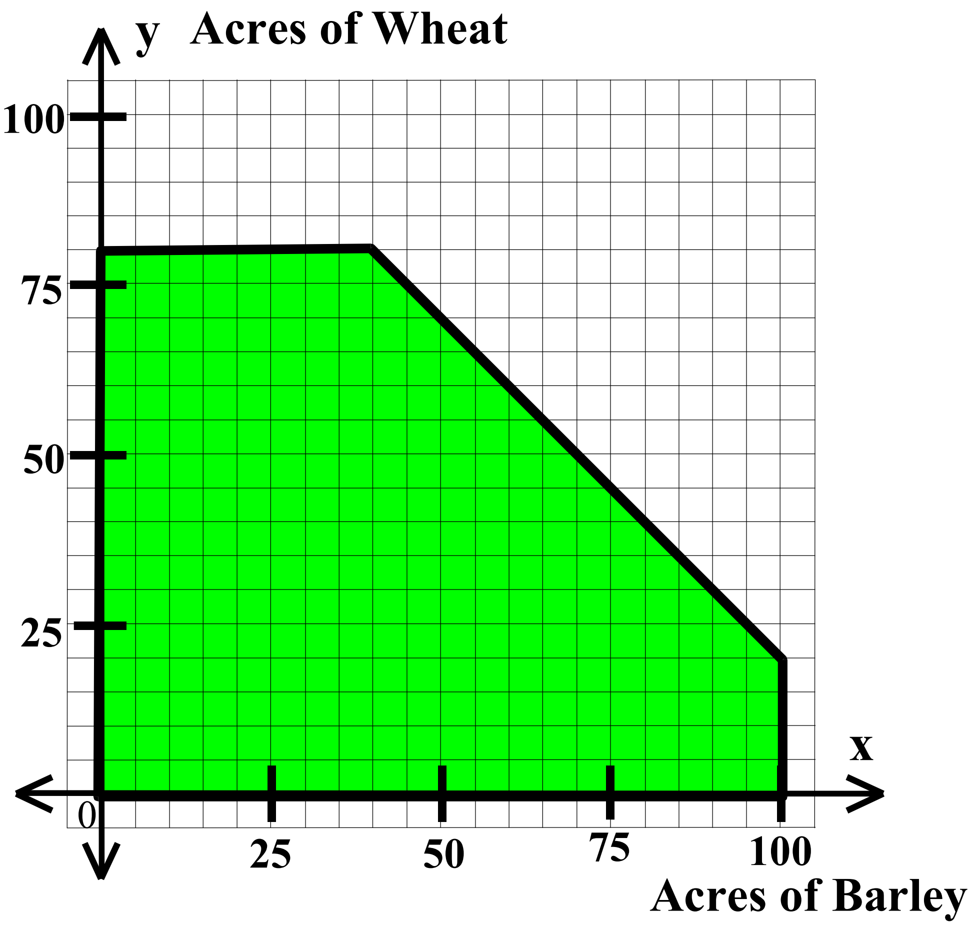
$x + y \le 120$

$20x + 30y \le 3000$

$x \ge 0 \quad y \ge 0$

$30y \le -20x + 3000$

$y \le$



Algebra II Applying Systems of Linear Inequalities

$x \leq 100$

$y \leq 80$

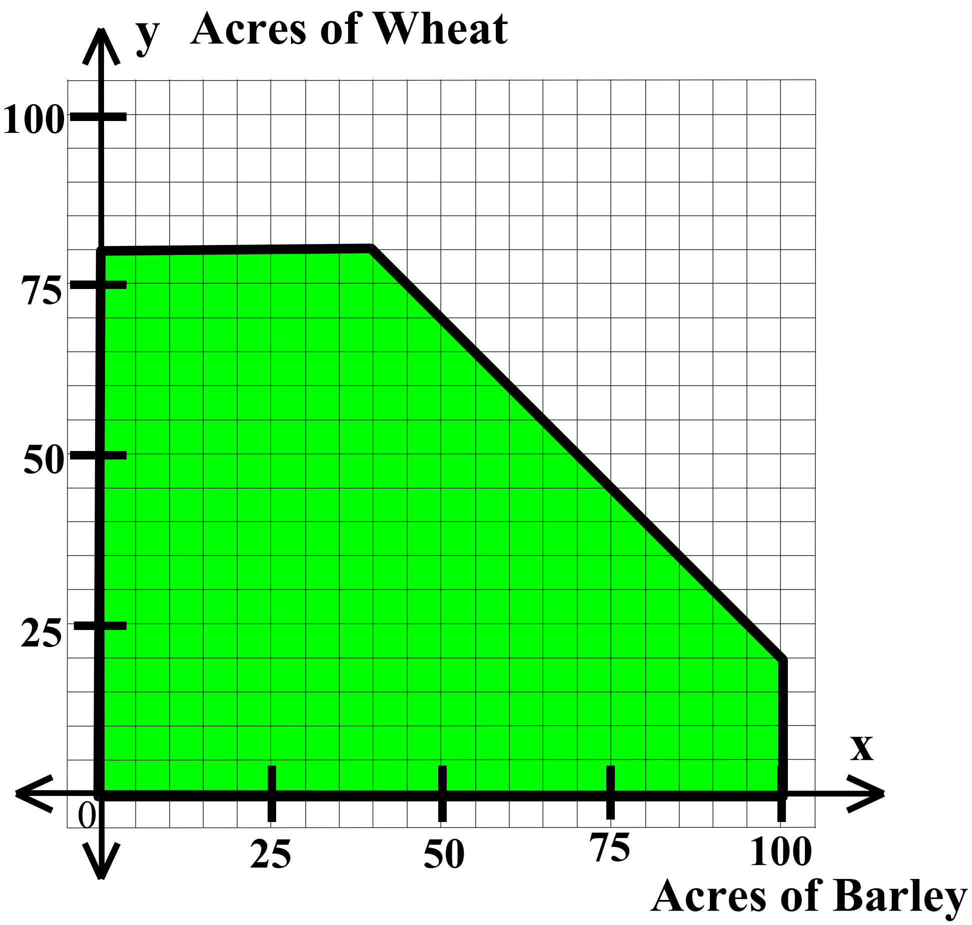
$x + y \leq 120$

$20x + 30y \leq 3000$

$x \geq 0 \quad y \geq 0$

$30y \leq -20x + 3000$

$y \leq (-2/3)x$



Algebra II   Applying Systems of Linear Inequalities

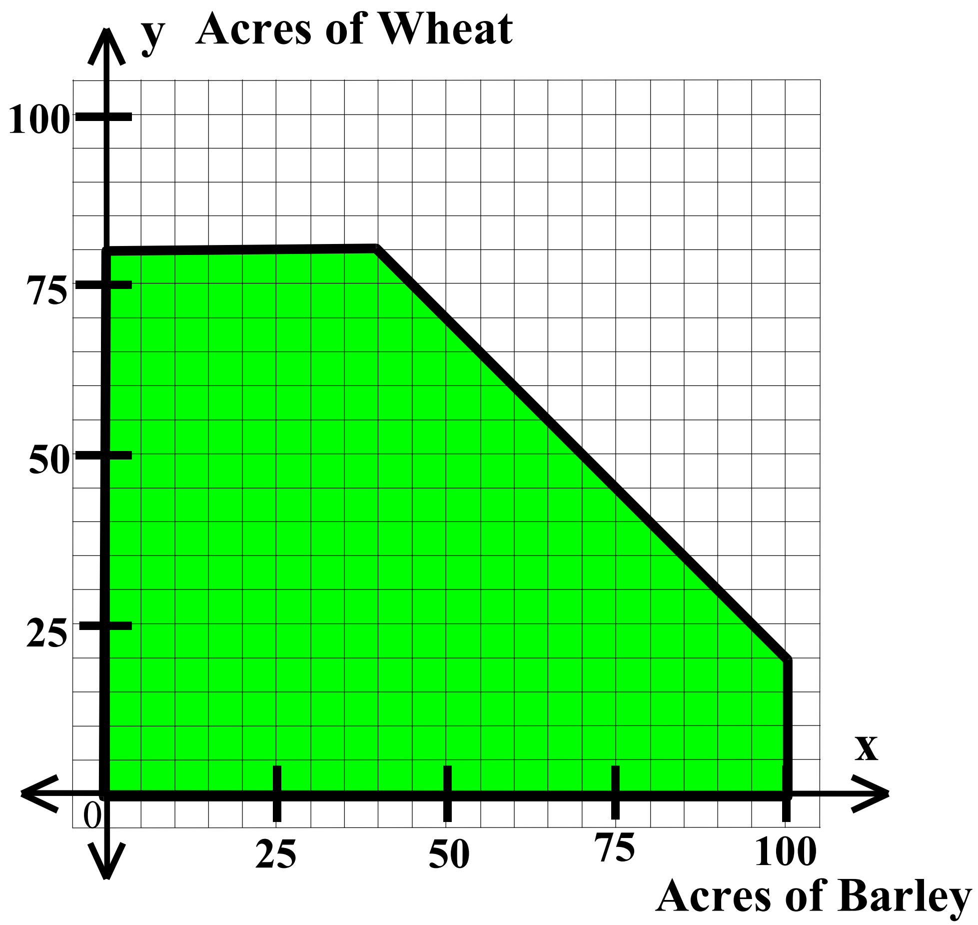
$x \le 100$

$y \le 80$

$x + y \le 120$

$20x + 30y \le 3000$

$x \ge 0 \quad y \ge 0$



$30y \le -20x + 3000$

$y \le (-2/3)x +$

Algebra II Applying Systems of Linear Inequalities

$x \leq 100$

$y \leq 80$

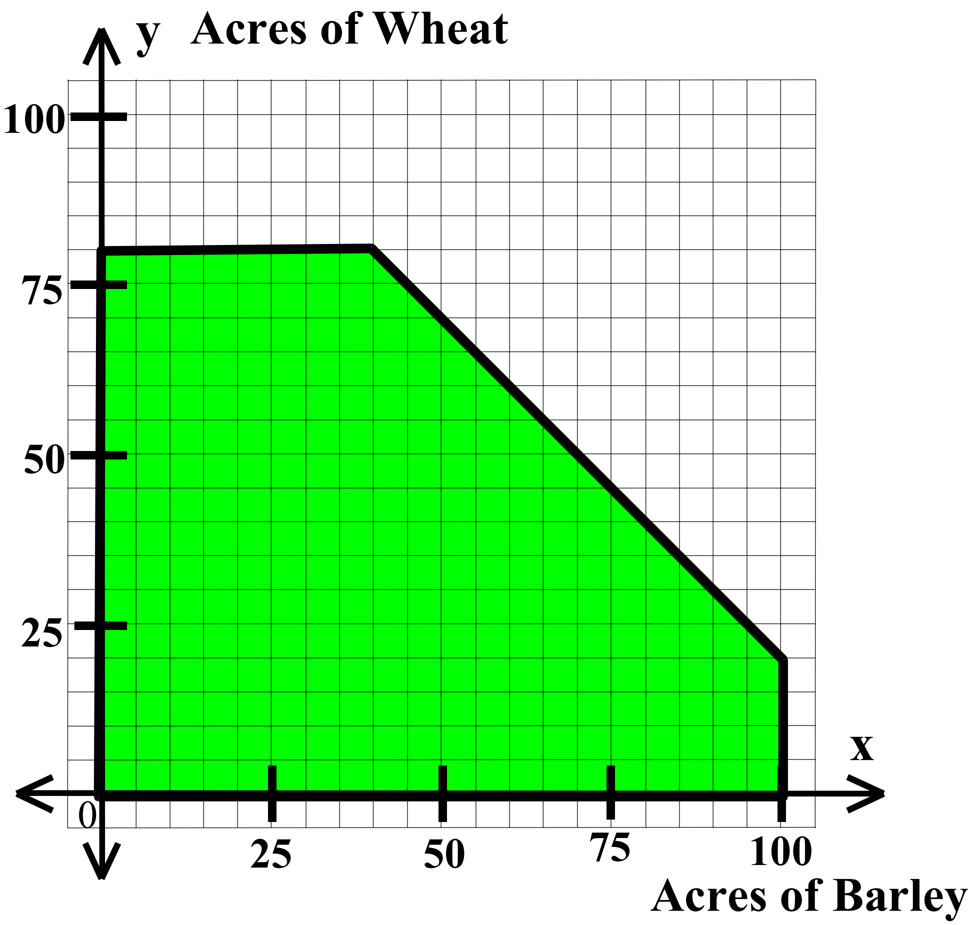
$x + y \leq 120$

$20x + 30y \leq 3000$

$x \geq 0 \quad y \geq 0$

$30y \leq -20x + 3000$

$y \leq (-2/3)x + 100$



Algebra II   Applying Systems of Linear Inequalities

$x \le 100$

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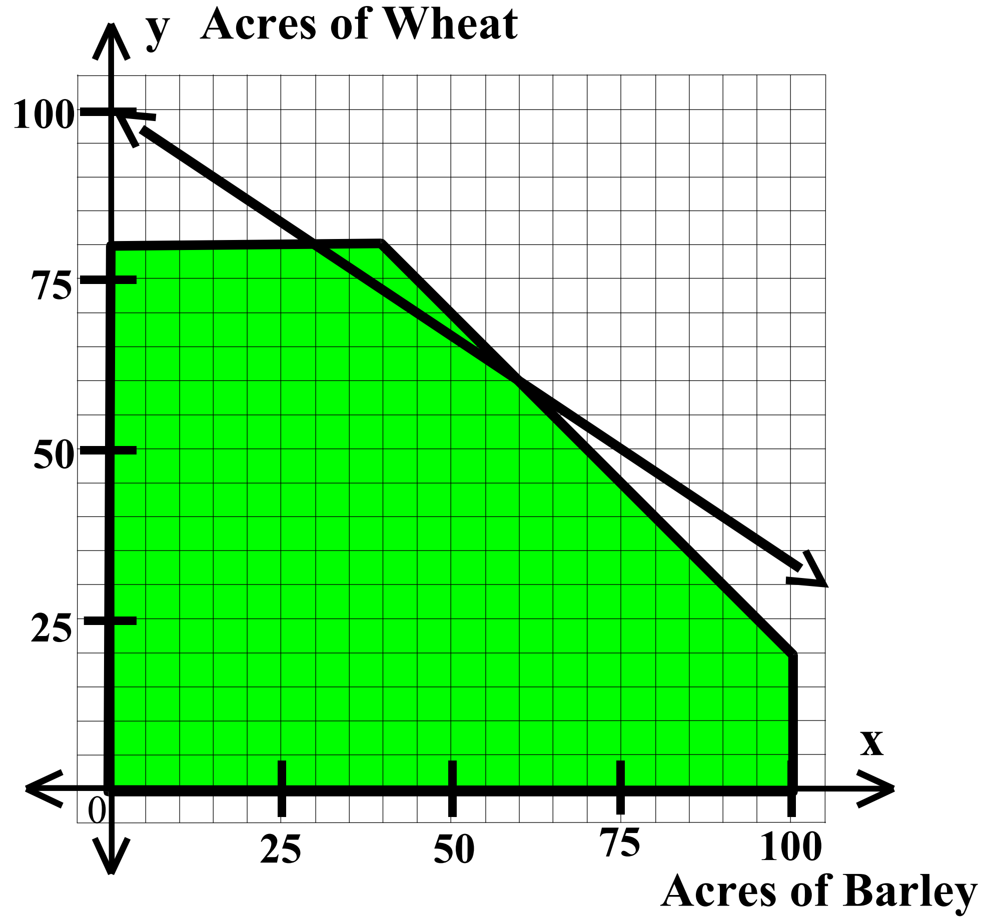
$x \ge 0 \quad y \ge 0$

$30y \le -20x + 3000$

$y \le (-2/3)x + 100$



Algebra II   Applying Systems of Linear Inequalities

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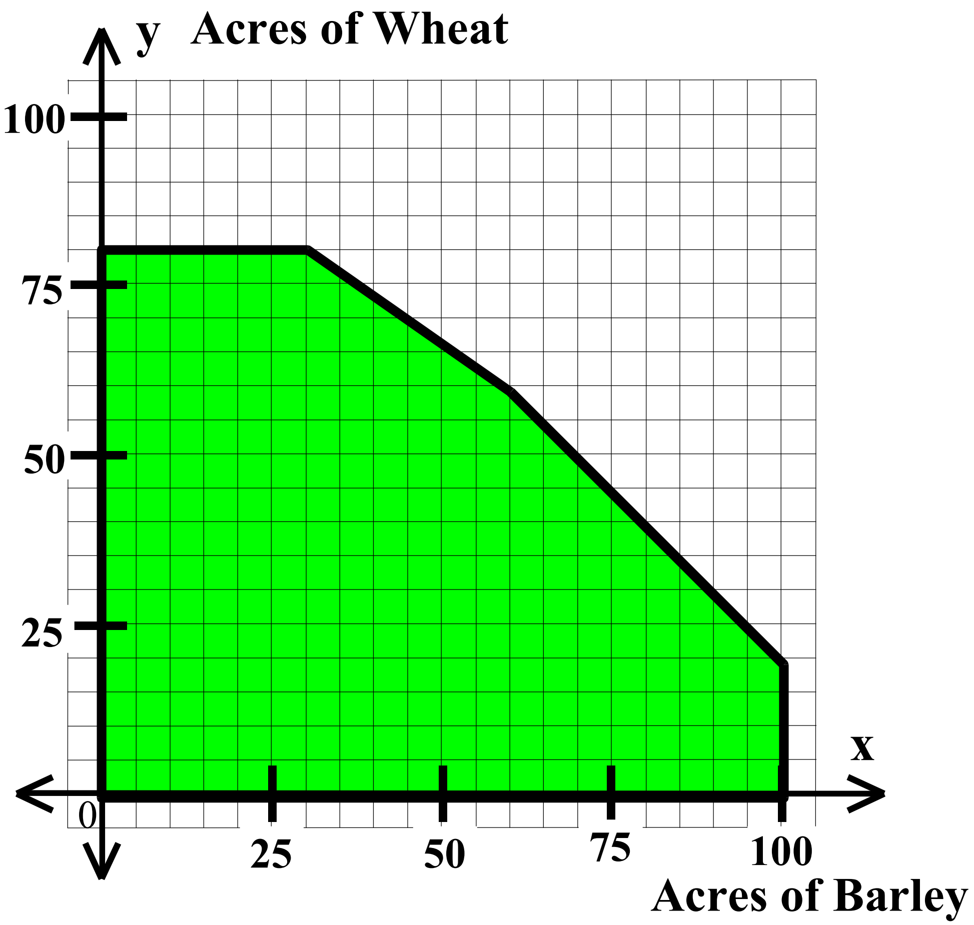
$x \geq 0 \quad y \geq 0$



$$30y \leq -20x + 3000$$

$$y \leq (-2/3)x + 100$$

Algebra II   Applying Systems of Linear Inequalities

$x \le 100$

$y \le 80$

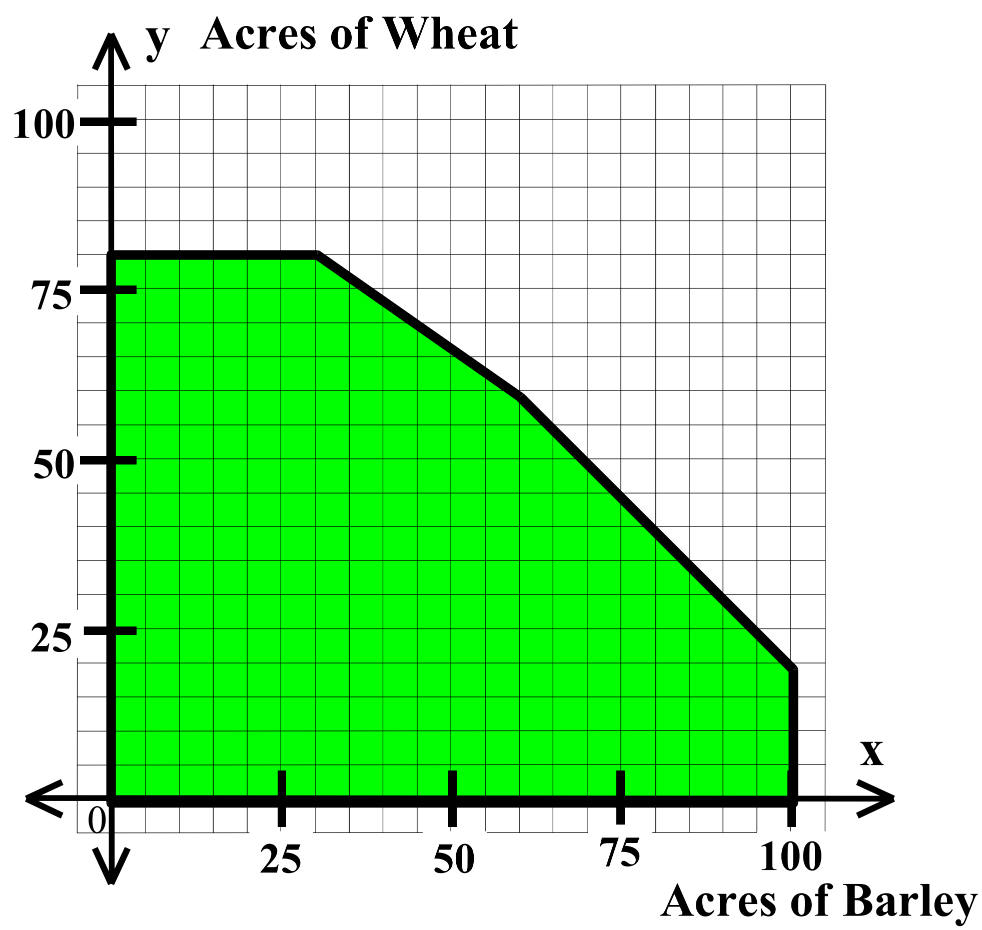
$x + y \le 120$

$20x + 30y \le 3000$

$x \ge 0 \qquad y \ge 0$

$30y \le -20x + 3000$

$y \le (-2/3)x + 100$



Algebra II   Applying Systems of Linear Inequalities

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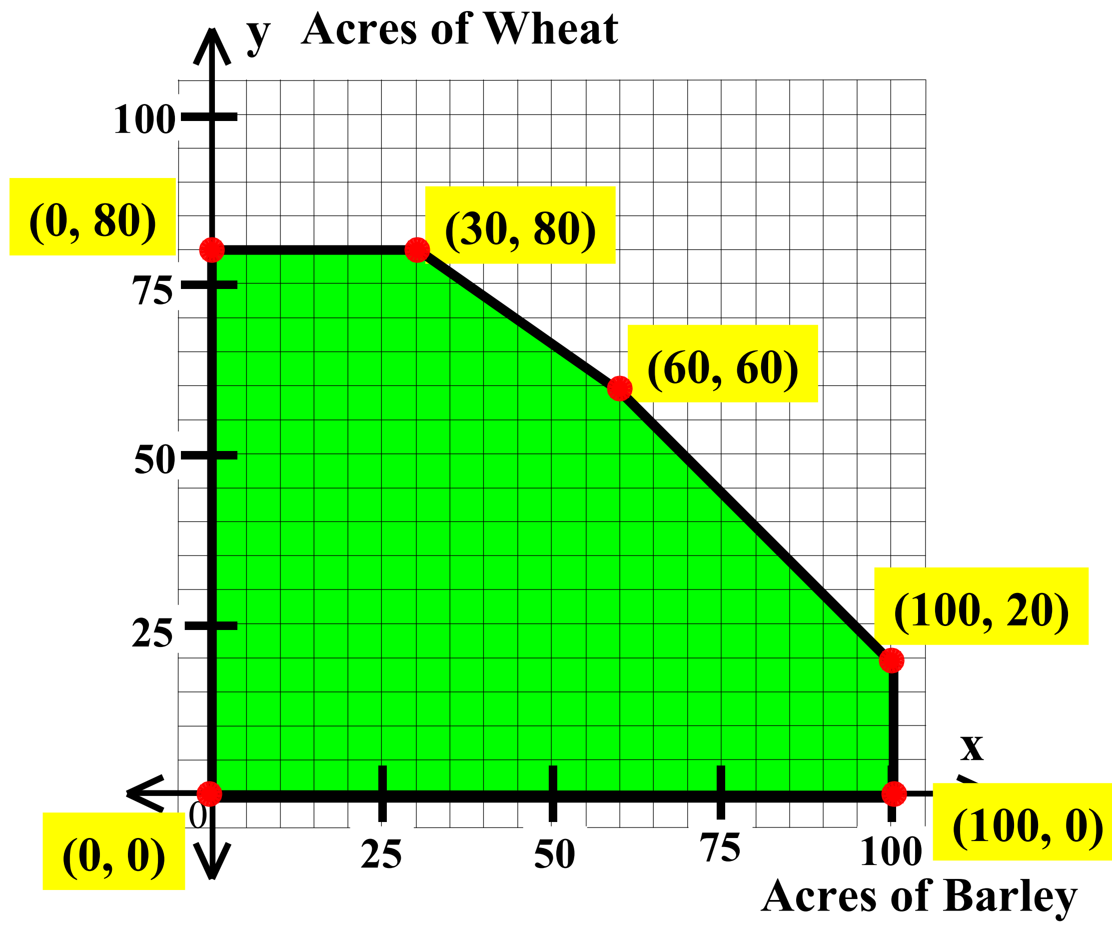
$x \ge 0 \qquad y \ge 0$

$30y \le -20x + 3000$

$y \le (-2/3)x + 100$



Algebra II Applying Systems of Linear Inequalities

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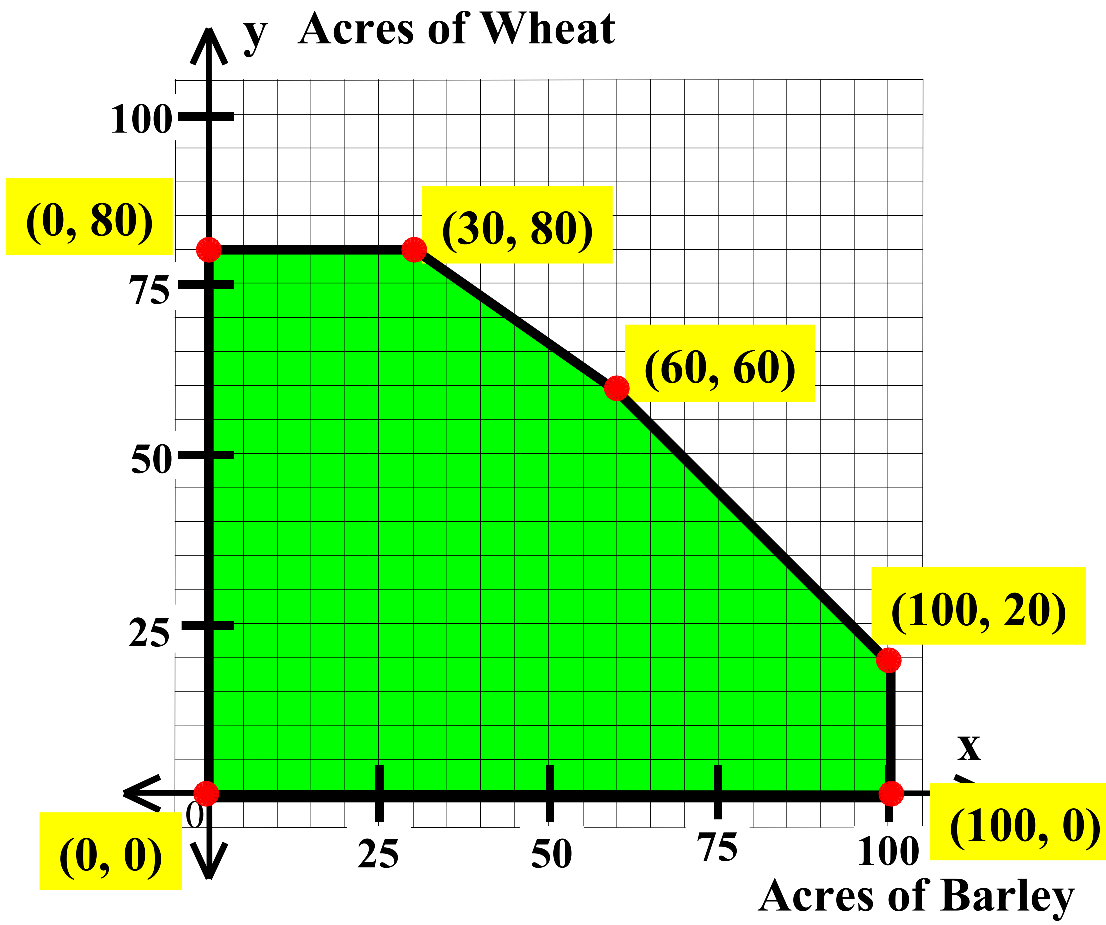

Algebra II Applying Systems of Linear Inequalities

A farming family wishes to plant some barley and some wheat. They can plant a maximum of 100 acres of barley and a maximum of 80 acres of wheat. However, they only have 120 acres of land available for planting. Barley costs $20 per acre for seeds, and wheat costs $30 per acre for seeds. However, they only have $3000 available for seed costs. They expect a harvest of 1000 pounds per acre of barley and 3000 pounds per acre of wheat. How many acres of each crop should they plant to maximize their total harvest?

	Number of Acres	Seed Cost ($)
Barley	x	$20x$
Wheat	y	$30y$

$$x \le 100$$
$$y \le 80$$
$$x + y \le 120$$
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Algebra II Applying Systems of Linear Inequalities

A farming family wishes to plant some barley and some wheat. They can plant a maximum of 100 acres of barley and a maximum of 80 acres of wheat. However, they only have 120 acres of land available for planting. Barley costs $20 per acre for seeds, and wheat costs $30 per acre for seeds. However, they only have $3000 available for seed costs. They expect a harvest of 1000 pounds per acre of barley and 3000 pounds per acre of wheat. How many acres of each crop should they plant to maximize their total harvest?

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$$20x + 30y \le 3000$$
$$x \ge 0 \quad y \ge 0$$

Now, let's consider the objective function.

Algebra II Applying Systems of Linear Inequalities

A farming family wishes to plant some barley and some wheat. They can plant a maximum of 100 acres of barley and a maximum of 80 acres of wheat. However, they only have 120 acres of land available for planting. Barley costs \$20 per acre for seeds, and wheat costs \$30 per acre for seeds. However, they only have \$3000 available for seed costs. They expect a harvest of 1000 pounds per acre of barley and 3000 pounds per acre of wheat. How many acres of each crop should they plant to maximize their total harvest?

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They want to maximize their total harvest !!

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	Number of Acres	Seed Cost (\$)	Harvest (pounds)
Barley	x	$20x$	
Wheat	y	$30y$	

$$x \le 100$$
$$y \le 80$$
$$x + y \le 120$$
$$20x + 30y \le 3000$$
$$x \ge 0 \qquad y \ge 0$$

Now, let's consider the objective function.

They want to maximize their total harvest !!

Algebra II   Applying Systems of Linear Inequalities

A farming family wishes to plant some barley and some wheat. They can plant a maximum of 100 acres of barley and a maximum of 80 acres of wheat. However, they only have 120 acres of land available for planting. Barley costs \$20 per acre for seeds, and wheat costs \$30 per acre for seeds. However, they only have \$3000 available for seed costs. They expect a harvest of 1000 pounds per acre of barley and 3000 pounds per acre of wheat. How many acres of each crop should they plant to maximize their total harvest?

	Number of Acres	Seed Cost (\$)	Harvest (pounds)
Barley	x	20x	
Wheat	y	30y	

Now, let's consider the objective function.

They want to maximize their total harvest !!

$x \le 100$

$y \le 80$

$x + y \le 120$

$20x + 30y \le 3000$

$x \ge 0 \quad y \ge 0$

Algebra II Applying Systems of Linear Inequalities

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$$x + y \leq 120$$
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	Number of Acres	Seed Cost ($)	Harvest (pounds)
Barley	x	20x	1000x
Wheat	y	30y	

$$x \leq 100$$
$$y \leq 80$$
$$x + y \leq 120$$
$$20x + 30y \leq 3000$$
$$x \geq 0 \quad y \geq 0$$

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Algebra II Applying Systems of Linear Inequalities

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Now, let's consider the objective function.

T

Algebra II Applying Systems of Linear Inequalities

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$y \le 80$

$x + y \le 120$

$20x + 30y \le 3000$

$x \ge 0 \quad y \ge 0$

Now, let's consider the objective function.

T =

Algebra II   Applying Systems of Linear Inequalities

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$$x \le 100$$
$$y \le 80$$
$$x + y \le 120$$
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$$x \ge 0 \qquad y \ge 0$$

Now, let's consider the objective function.

$T = 1000x$

Algebra II Applying Systems of Linear Inequalities

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Now, let's consider the objective function.

$T = 1000x +$

Algebra II Applying Systems of Linear Inequalities

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$$y \leq 80$$
$$x + y \leq 120$$
$$20x + 30y \leq 3000$$
$$x \geq 0 \quad y \geq 0$$

Now, let's consider the objective function.

$$T = 1000x + 3000y$$

Algebra II   Applying Systems of Linear Inequalities

A farming family wishes to plant some barley and some wheat. They can plant a maximum of 100 acres of barley and a maximum of 80 acres of wheat. However, they only have 120 acres of land available for planting. Barley costs \$20 per acre for seeds, and wheat costs \$30 per acre for seeds. However, they only have \$3000 available for seed costs. They expect a harvest of 1000 pounds per acre of barley and 3000 pounds per acre of wheat. How many acres of each crop should they plant to maximize their total harvest?

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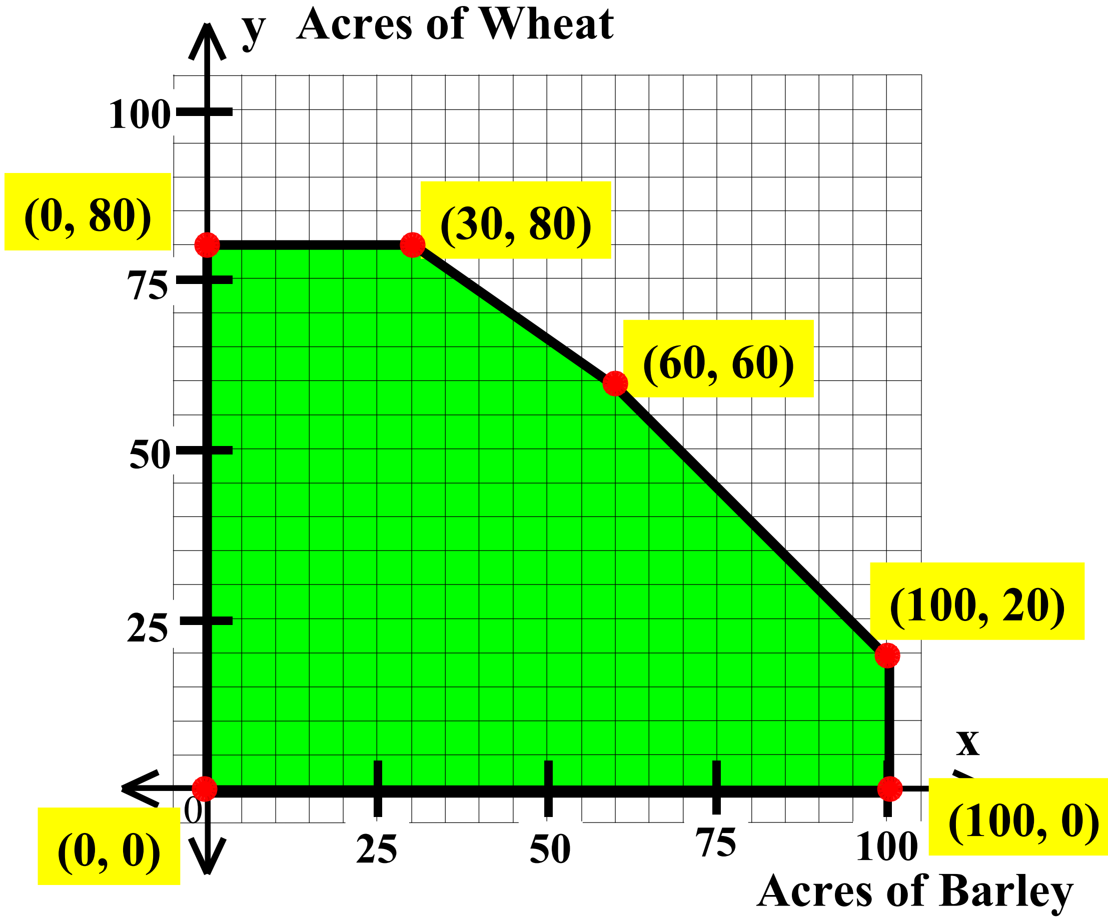
Algebra II Applying Systems of Linear Inequalities

$x \leq 100$
$y \leq 80$
$x + y \leq 120$
$20x + 30y \leq 3000$
$x \geq 0 \quad y \geq 0$

Objective Function

$T = 1000x + 3000y$



Algebra II   Applying Systems of Linear Inequalities

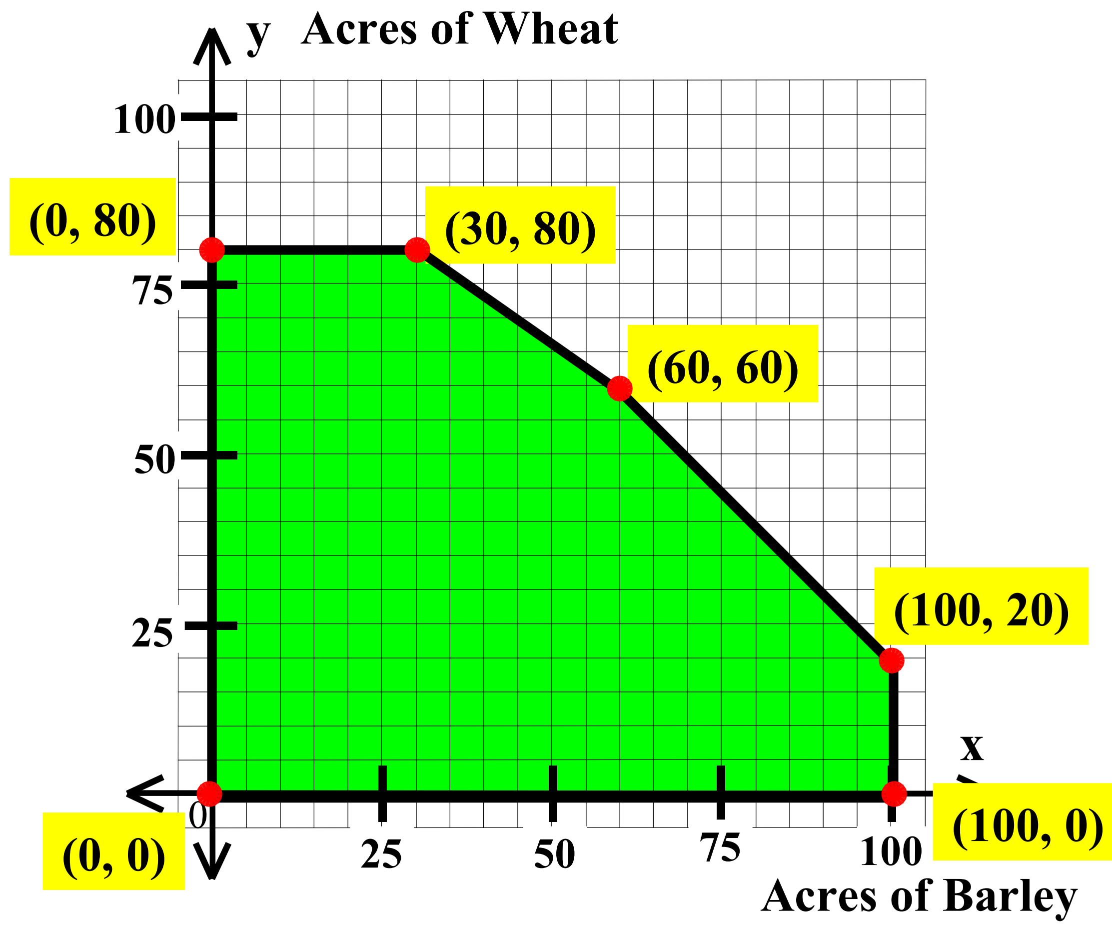
$x \leq 100$

$y \leq 80$

$x + y \leq 120$

$20x + 30y \leq 3000$

$x \geq 0 \quad y \geq 0$



Objective Function

$T = 1000x + 3000y$

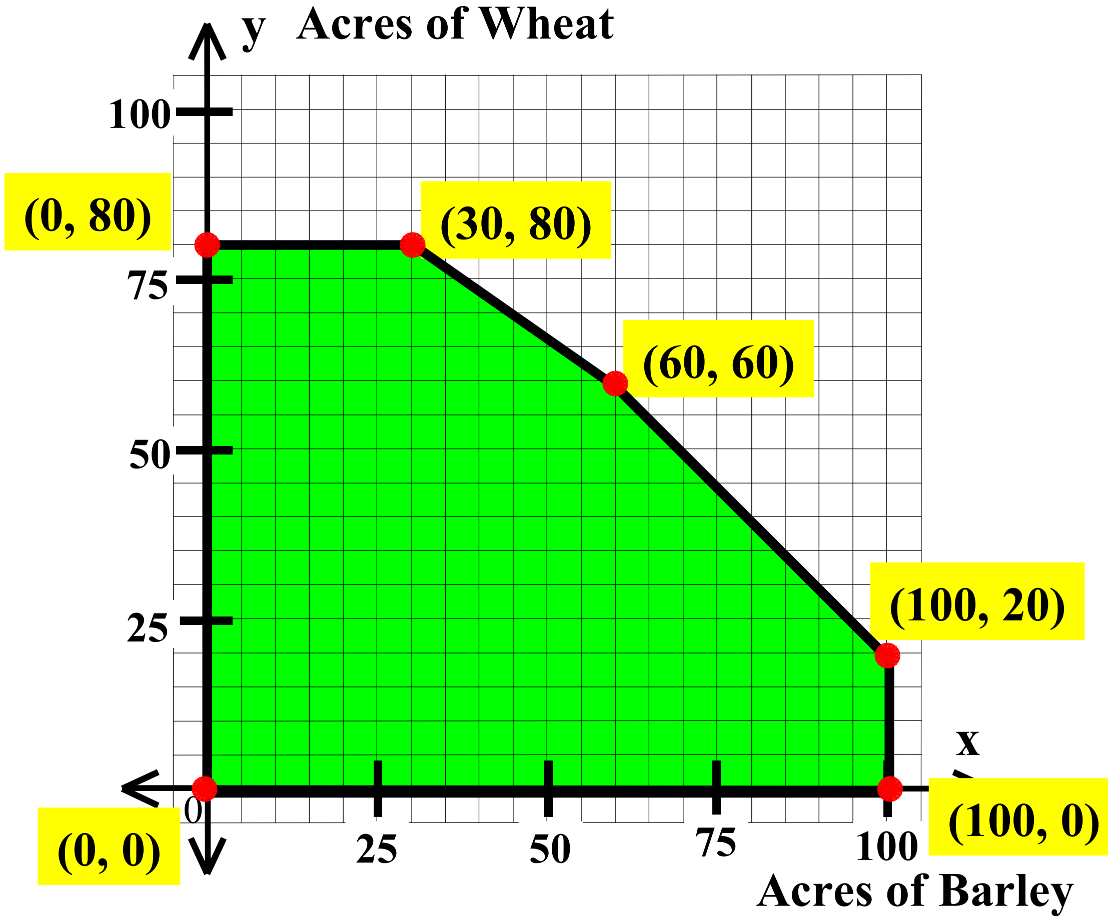
Here is the rule:

Algebra II Applying Systems of Linear Inequalities

$$x \le 100$$
$$y \le 80$$
$$x + y \le 120$$
$$20x + 30y \le 3000$$
$$x \ge 0 \qquad y \ge 0$$

Objective Function

$$T = 1000x + 3000y$$



Here is the rule: If the region of possible solutions is a convex polygonal region,

Algebra II Applying Systems of Linear Inequalities

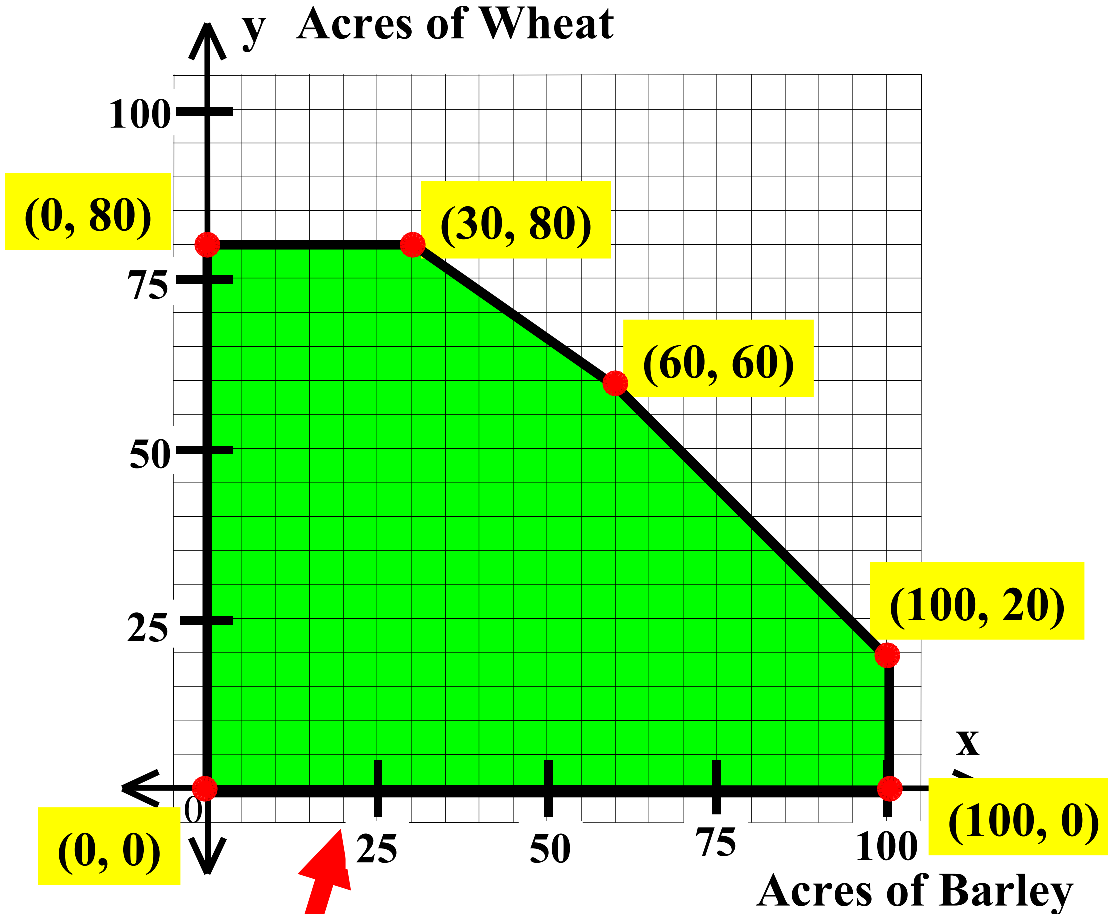
$x \leq 100$

$y \leq 80$

$x + y \leq 120$

$20x + 30y \leq 3000$

$x \geq 0 \quad y \geq 0$



Objective Function

$T = 1000x + 3000y$

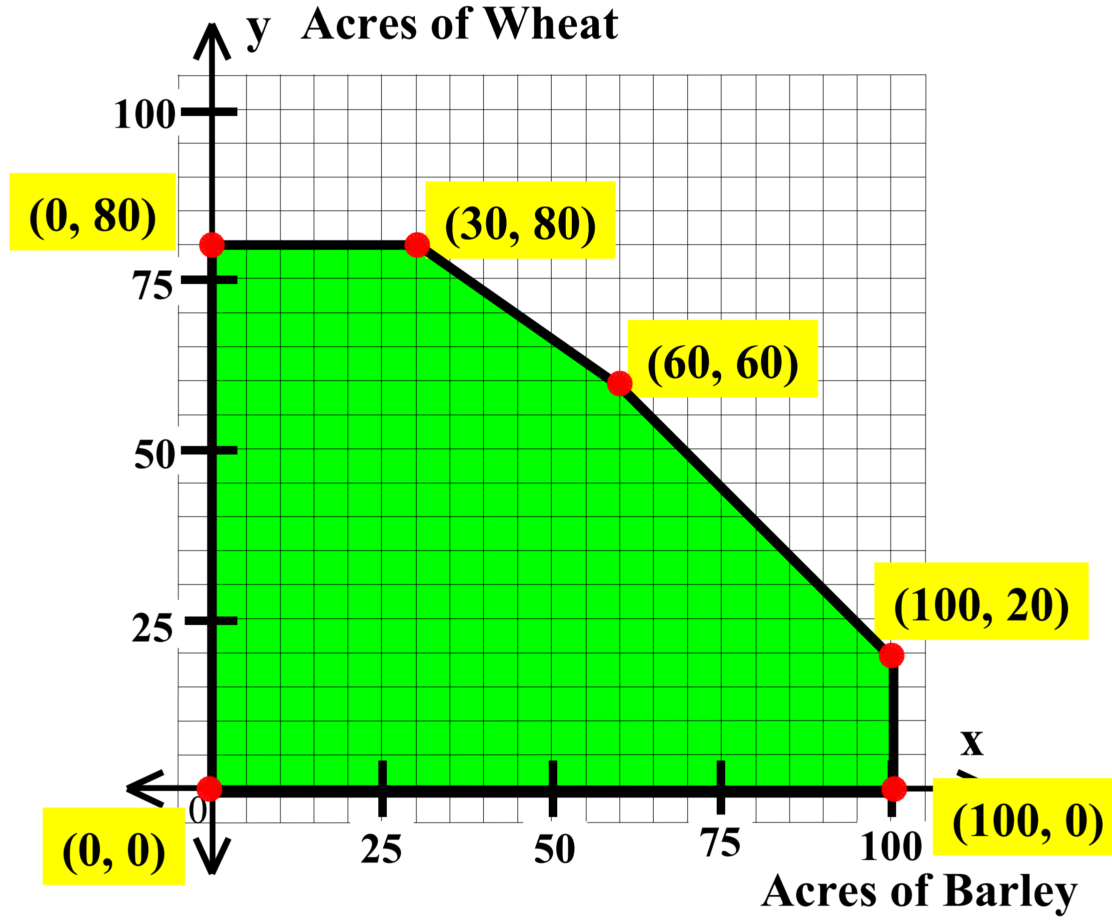
Here is the rule: If the region of possible solutions is a convex polygonal region, (which it is)

Algebra II   Applying Systems of Linear Inequalities

$x \le 100$
$y \le 80$
$x + y \le 120$
$20x + 30y \le 3000$
$x \ge 0 \quad y \ge 0$

Objective Function

$T = 1000x + 3000y$



Here is the rule: If the region of possible solutions is a convex polygonal region,

Algebra II Applying Systems of Linear Inequalities

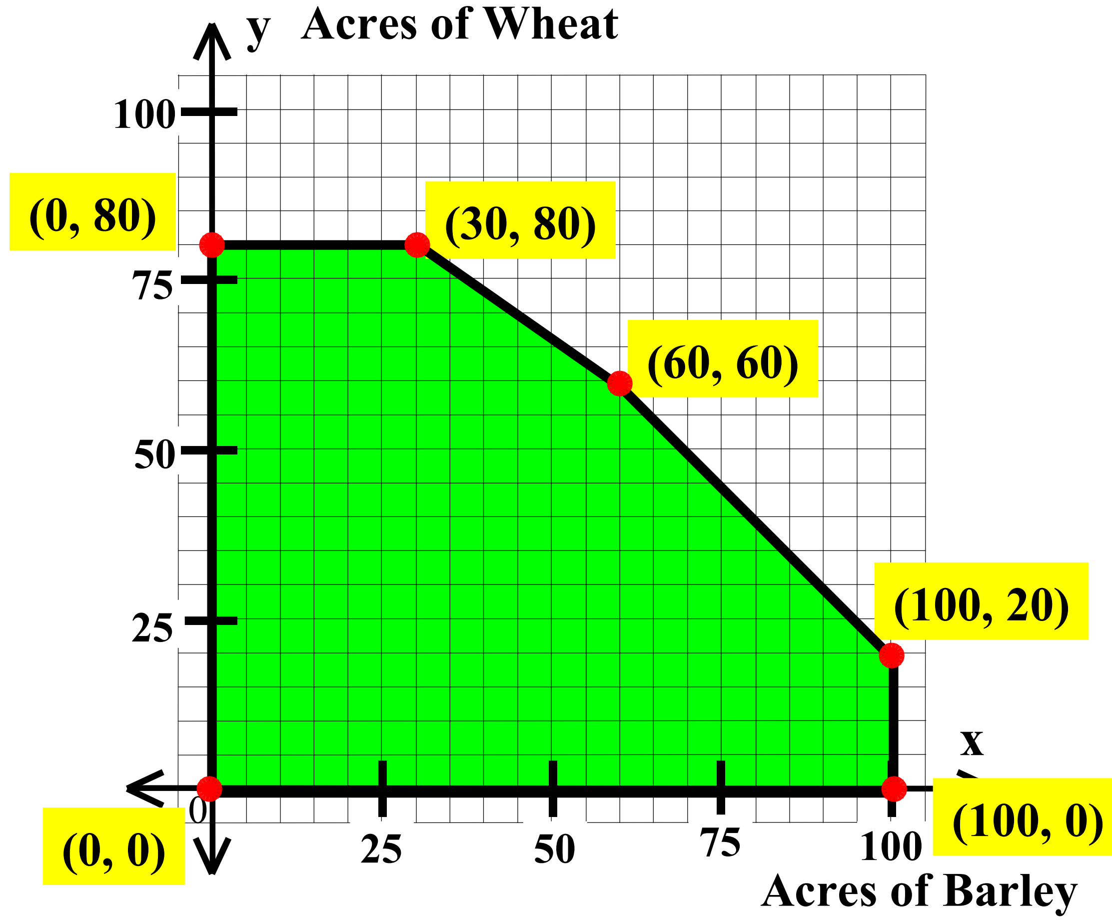
$x \leq 100$

$y \leq 80$

$x + y \leq 120$

$20x + 30y \leq 3000$

$x \geq 0 \quad y \geq 0$



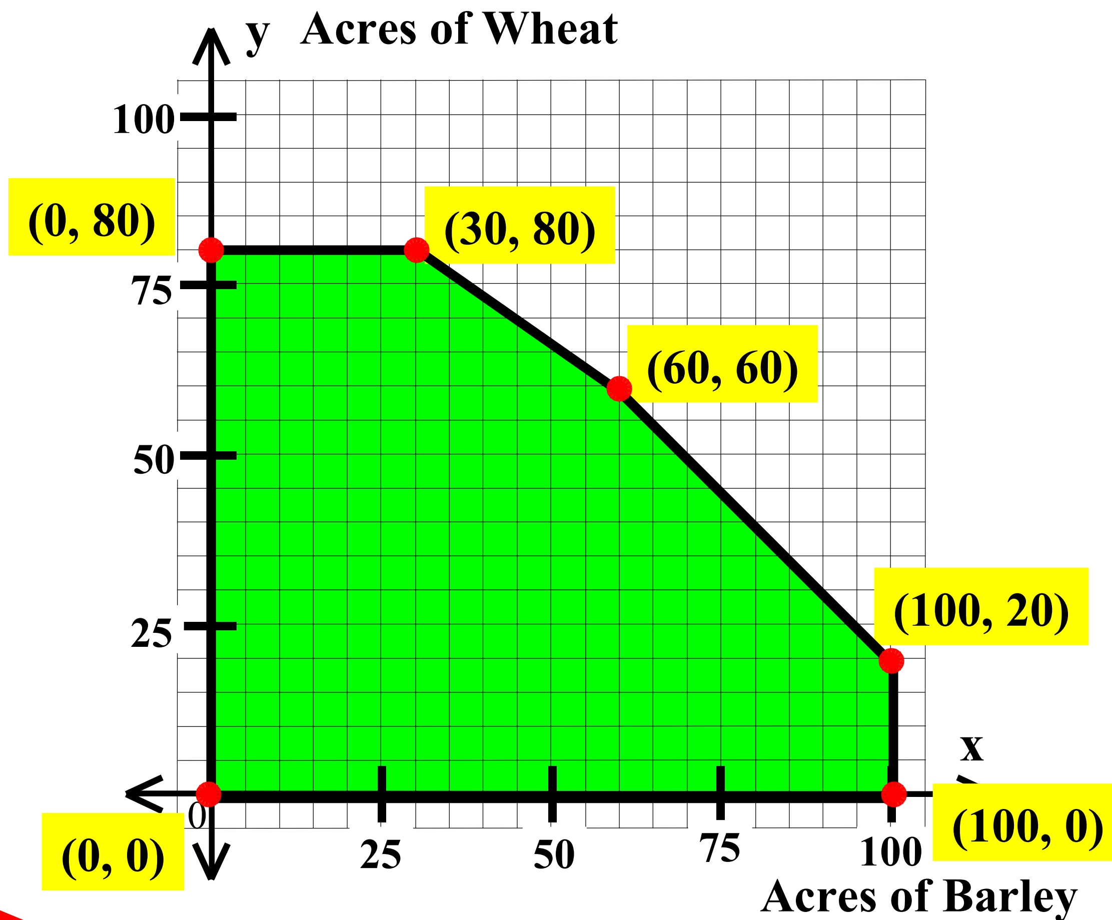
Objective Function

$T = 1000x + 3000y$

Here is the rule: If the region of possible solutions is a convex polygonal region, and the objective function is a linear function in terms of x and y,

Algebra II Applying Systems of Linear Inequalities

$$x \le 100$$
$$y \le 80$$
$$x + y \le 120$$
$$20x + 30y \le 3000$$
$$x \ge 0 \qquad y \ge 0$$



Objective Function

$$T = 1000x + 3000y$$

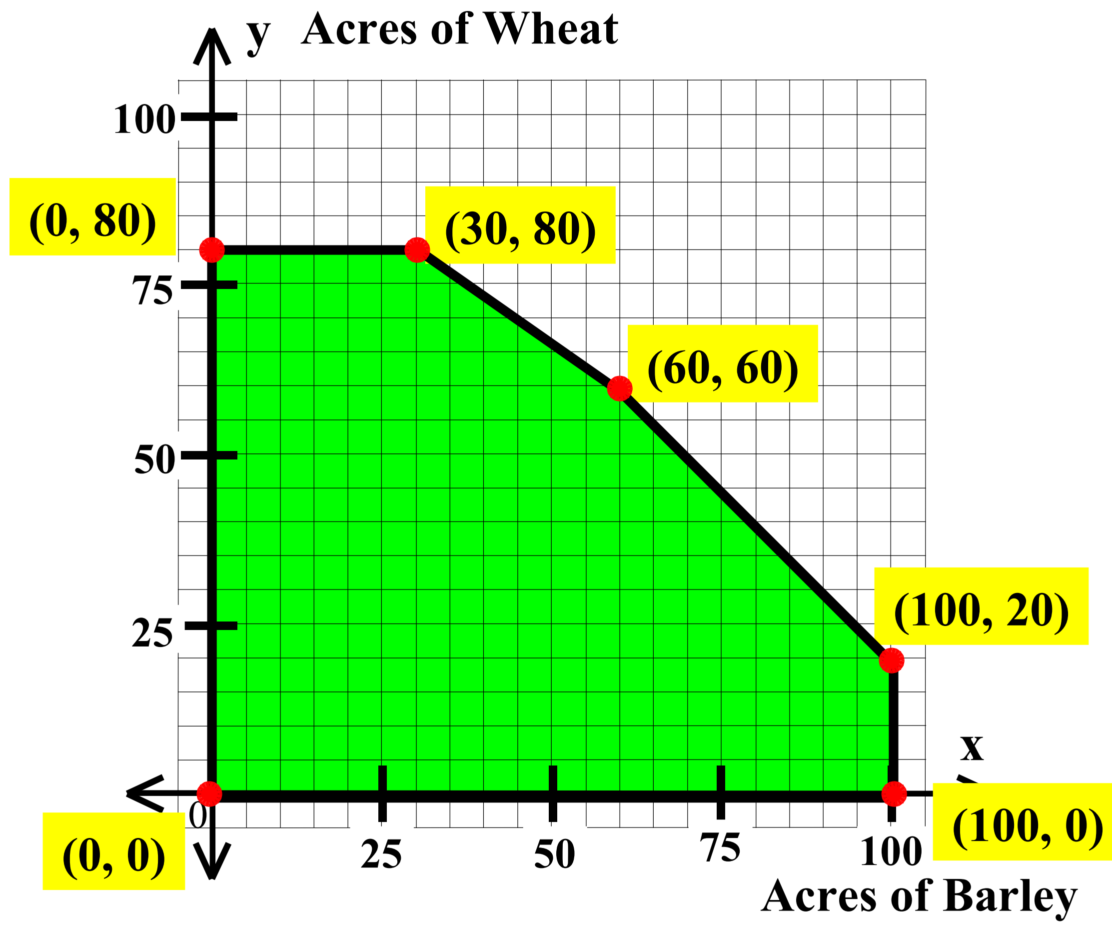
Here is the rule: If the region of possible solutions is a convex polygonal region, and the objective function is a linear function in terms of x and y, (which it is)

Algebra II Applying Systems of Linear Inequalities

$x \leq 100$
$y \leq 80$
$x + y \leq 120$
$20x + 30y \leq 3000$
$x \geq 0 \quad y \geq 0$

Objective Function

$T = 1000x + 3000y$



Here is the rule: If the region of possible solutions is a convex polygonal region, and the objective function is a linear function in terms of x and y,

Algebra II Applying Systems of Linear Inequalities

$x \leq 100$
$y \leq 80$
$x + y \leq 120$
$20x + 30y \leq 3000$
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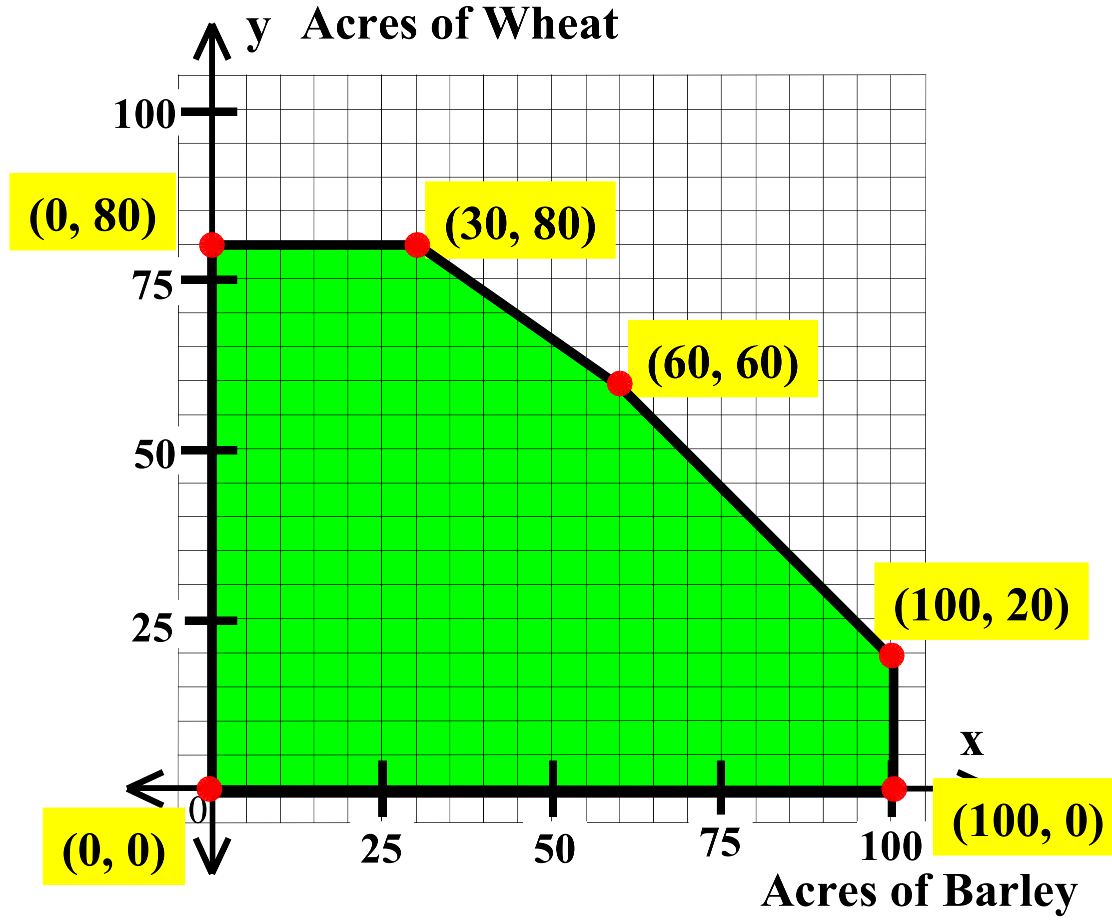


Objective Function

$T = 1000x + 3000y$

Here is the rule: If the region of possible solutions is a convex polygonal region, and the objective function is a linear function in terms of x and y, then the maximum

Algebra II   Applying Systems of Linear Inequalities

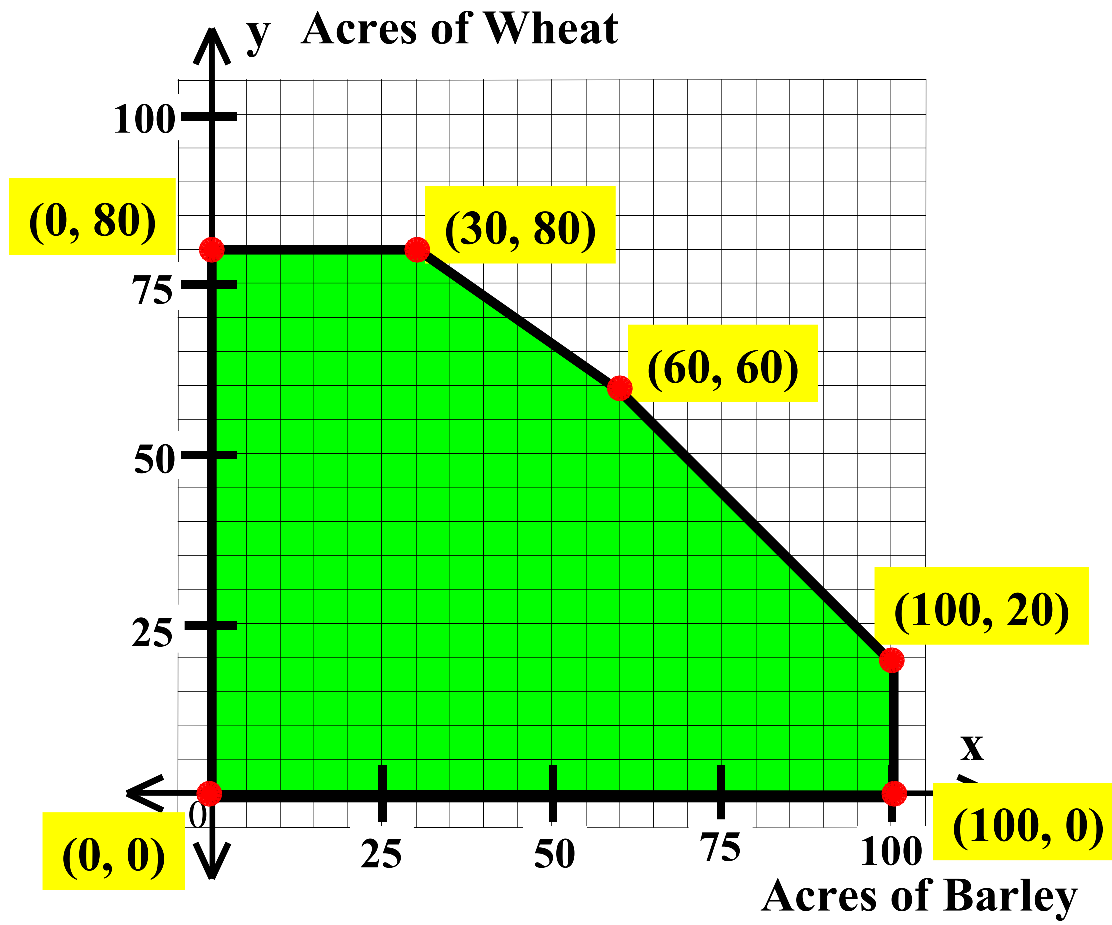
$x \leq 100$

$y \leq 80$

$x + y \leq 120$

$20x + 30y \leq 3000$

$x \geq 0 \quad y \geq 0$



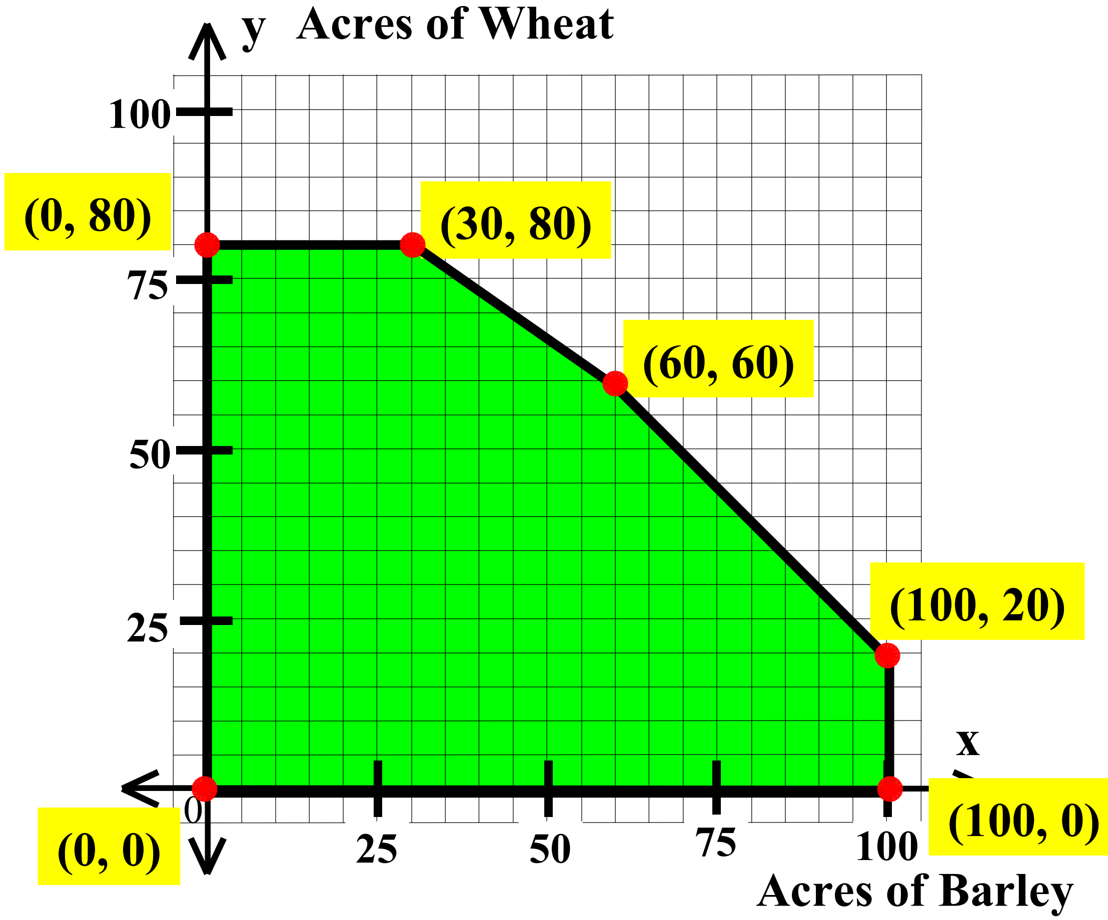
Objective Function

$T = 1000x + 3000y$

Here is the rule: If the region of possible solutions is a convex polygonal region, and the objective function is a linear function in terms of x and y, then the maximum and the minimum values

Algebra II Applying Systems of Linear Inequalities

$x \le 100$
$y \le 80$
$x + y \le 120$
$20x + 30y \le 3000$
$x \ge 0 \quad y \ge 0$



Objective Function

$T = 1000x + 3000y$

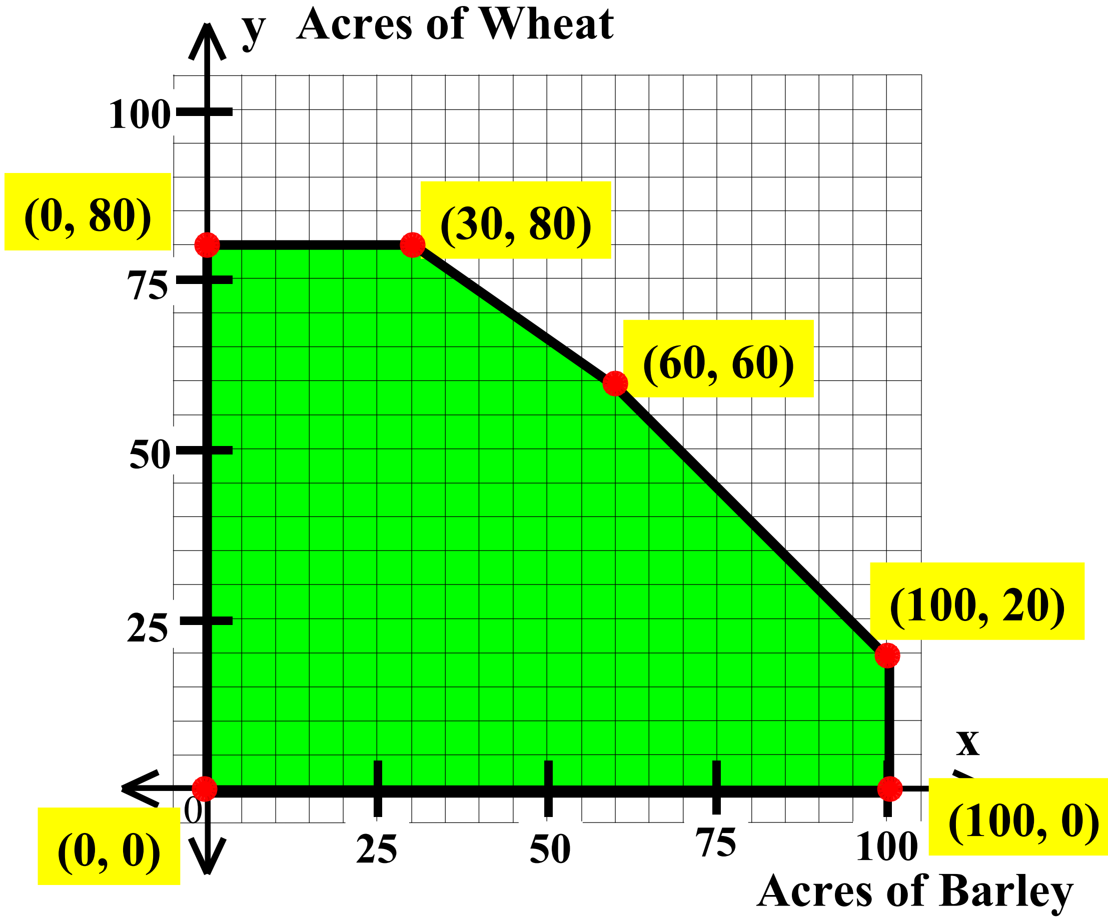
Here is the rule: If the region of possible solutions is a convex polygonal region, and the objective function is a linear function in terms of x and y, then the maximum and the minimum values will occur at a vertex of the region.

Algebra II Applying Systems of Linear Inequalities

$x \leq 100$
$y \leq 80$
$x + y \leq 120$
$20x + 30y \leq 3000$
$x \geq 0 \quad y \geq 0$

Objective Function

$T = 1000x + 3000y$



The graph represents all possible value of x and y for this problem.

Algebra II Applying Systems of Linear Inequalities

$x \le 100$

$y \le 80$

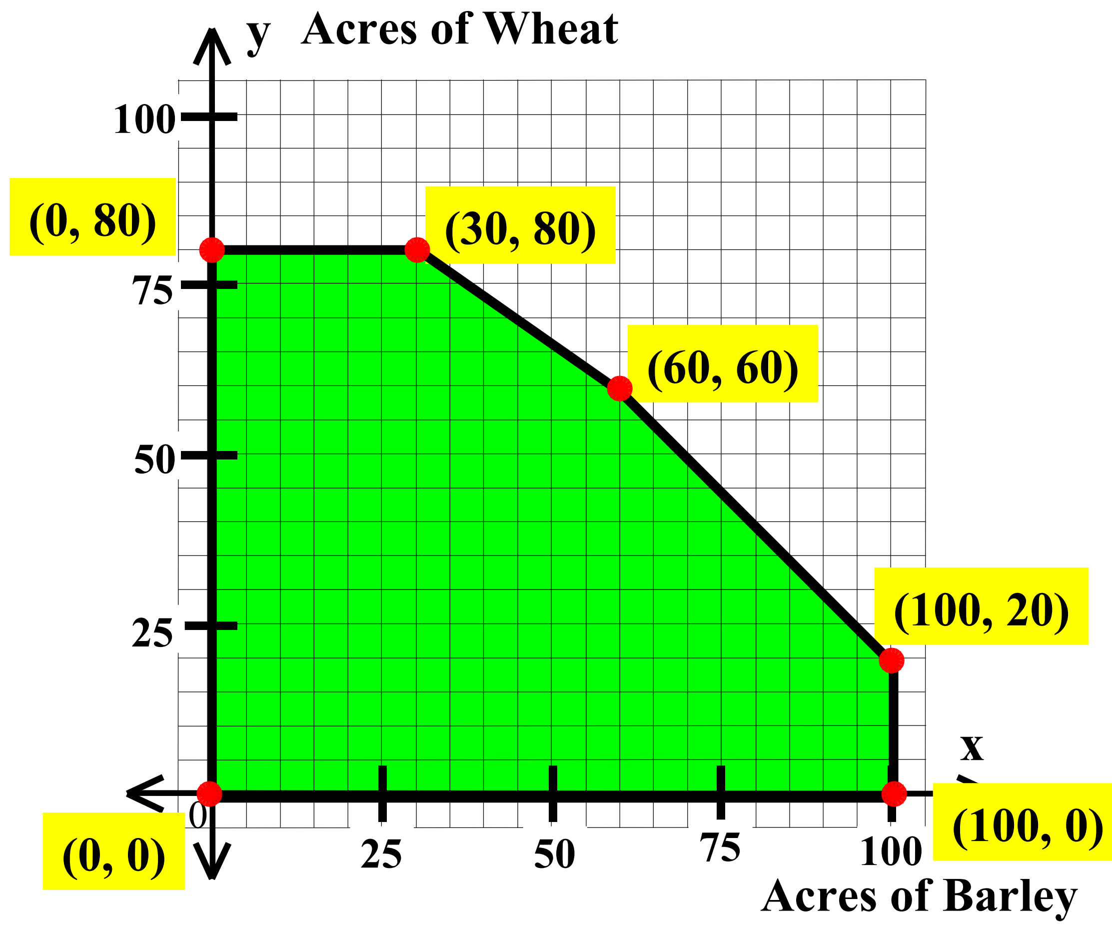
$x + y \le 120$

$20x + 30y \le 3000$

$x \ge 0 \quad y \ge 0$

Objective Function

$T = 1000x + 3000y$



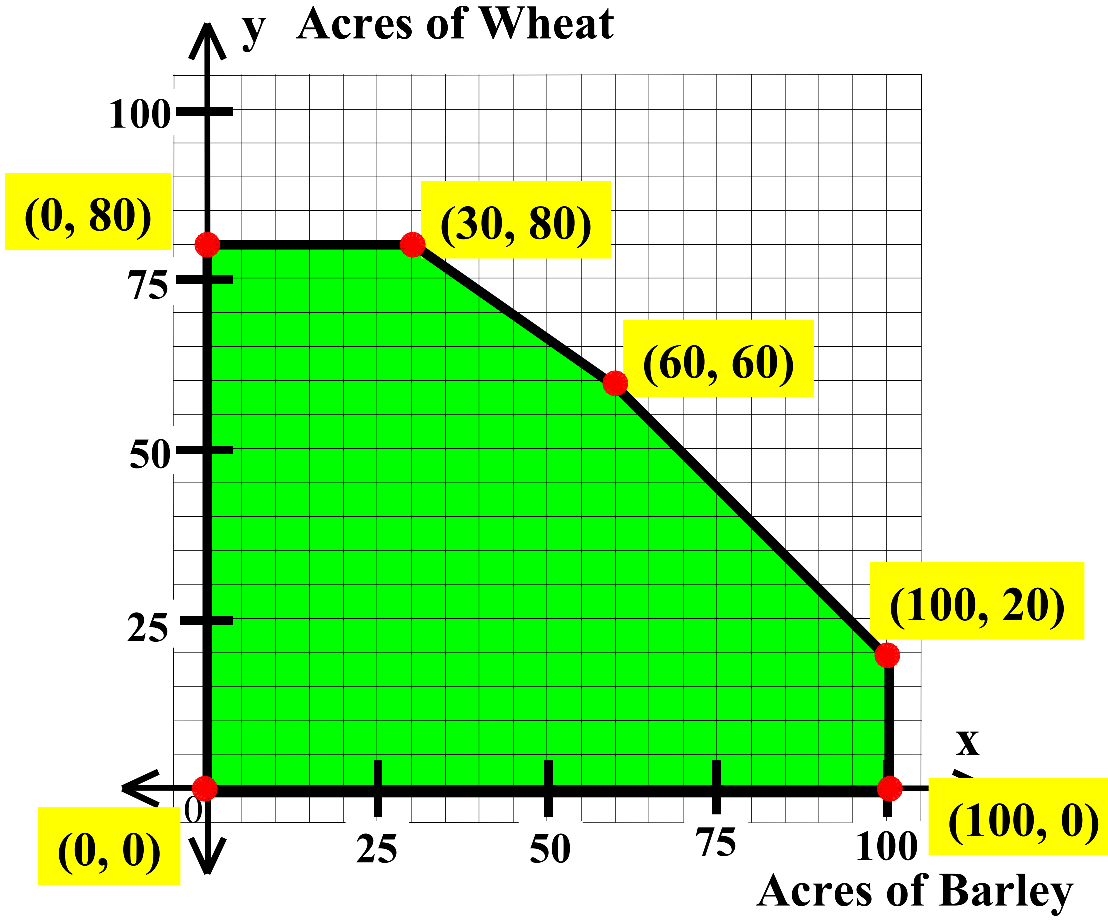
The graph represents all possible value of x and y for this problem. Clearly, the minimum value of T corresponds to the vertex (0, 0).

Algebra II Applying Systems of Linear Inequalities

$x \leq 100$
$y \leq 80$
$x + y \leq 120$
$20x + 30y \leq 3000$
$x \geq 0 \quad y \geq 0$

Objective Function

$T = 1000x + 3000y$



The graph represents all possible value of x and y for this problem. Clearly, the minimum value of T corresponds to the vertex (0, 0). (If you plant 0 acres of Barley and 0 acres of wheat, the total harvest will be 0 pounds.)

Algebra II Applying Systems of Linear Inequalities

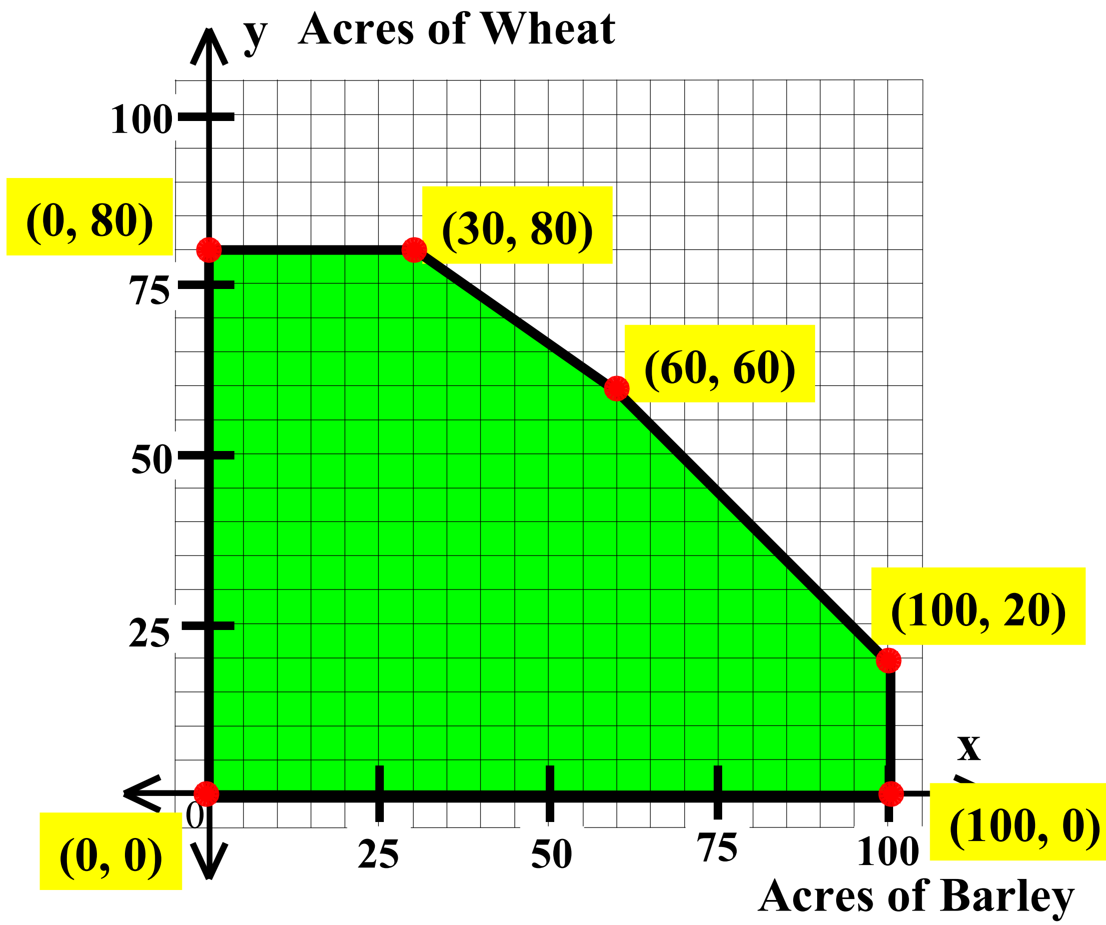
$x \leq 100$

$y \leq 80$

$x + y \leq 120$

$20x + 30y \leq 3000$

$x \geq 0 \qquad y \geq 0$



Objective Function

$T = 1000x + 3000y$

The graph represents all possible value of x and y for this problem.

Algebra II   Applying Systems of Linear Inequalities

$x \leq 100$

$y \leq 80$

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$20x + 30y \leq 3000$

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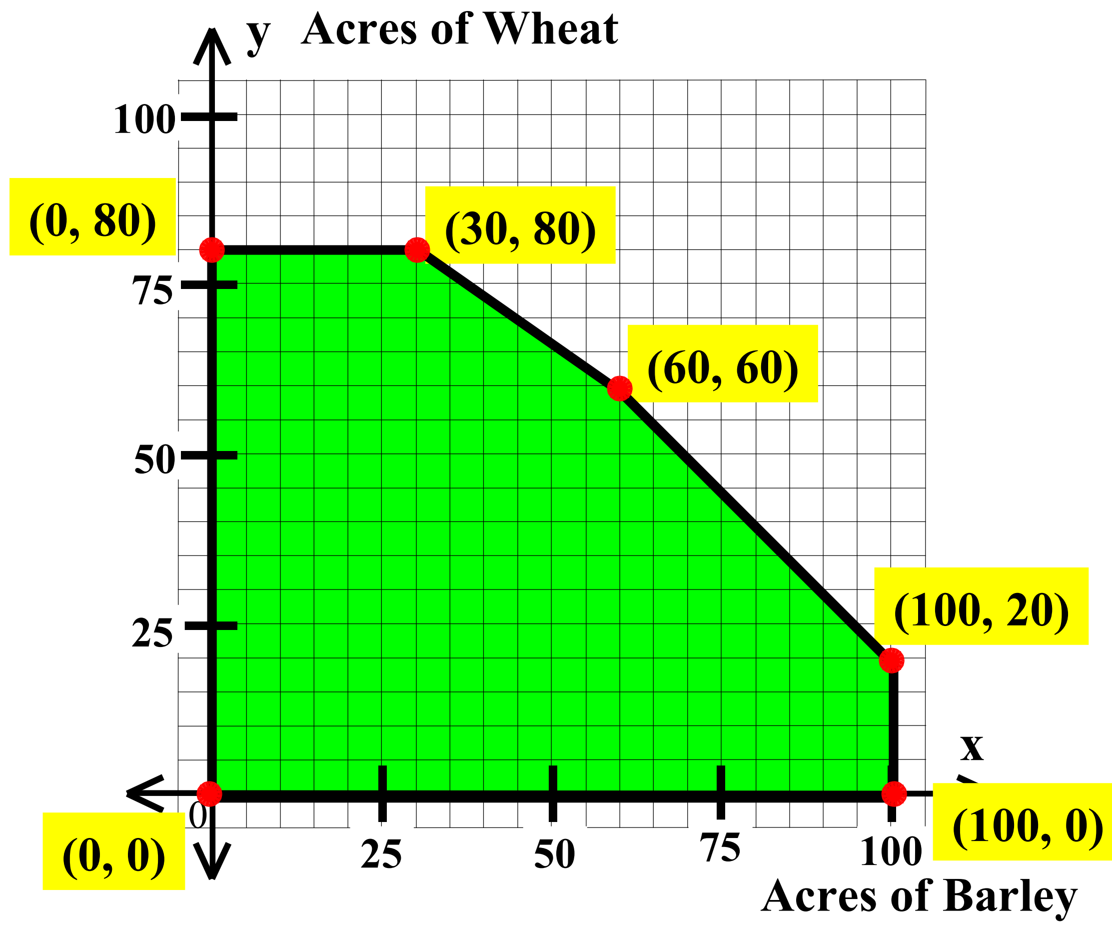
Objective Function

$T = 1000x + 3000y$



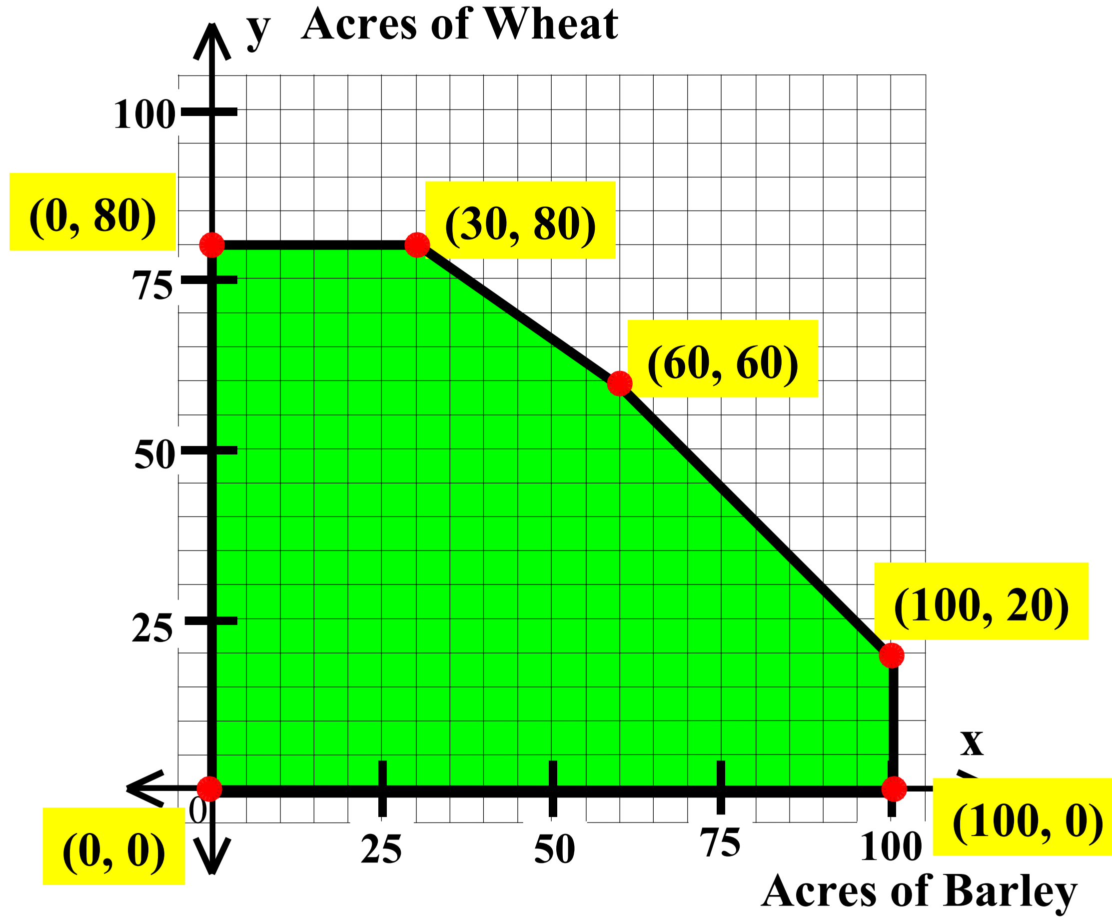
The graph represents all possible value of x and y for this problem. Now, consider two values of T, the total Harvest.

Algebra II Applying Systems of Linear Inequalities

$x \le 100$
$y \le 80$
$x + y \le 120$
$20x + 30y \le 3000$
$x \ge 0 \quad y \ge 0$

Objective Function

$T = 1000x + 3000y$



The graph represents all possible value of x and y for this problem. Now, consider two values of T, the total Harvest. T = 120,000 pounds and T = 300,000 pounds

Algebra II Applying Systems of Linear Inequalities

$x \leq 100$

$y \leq 80$

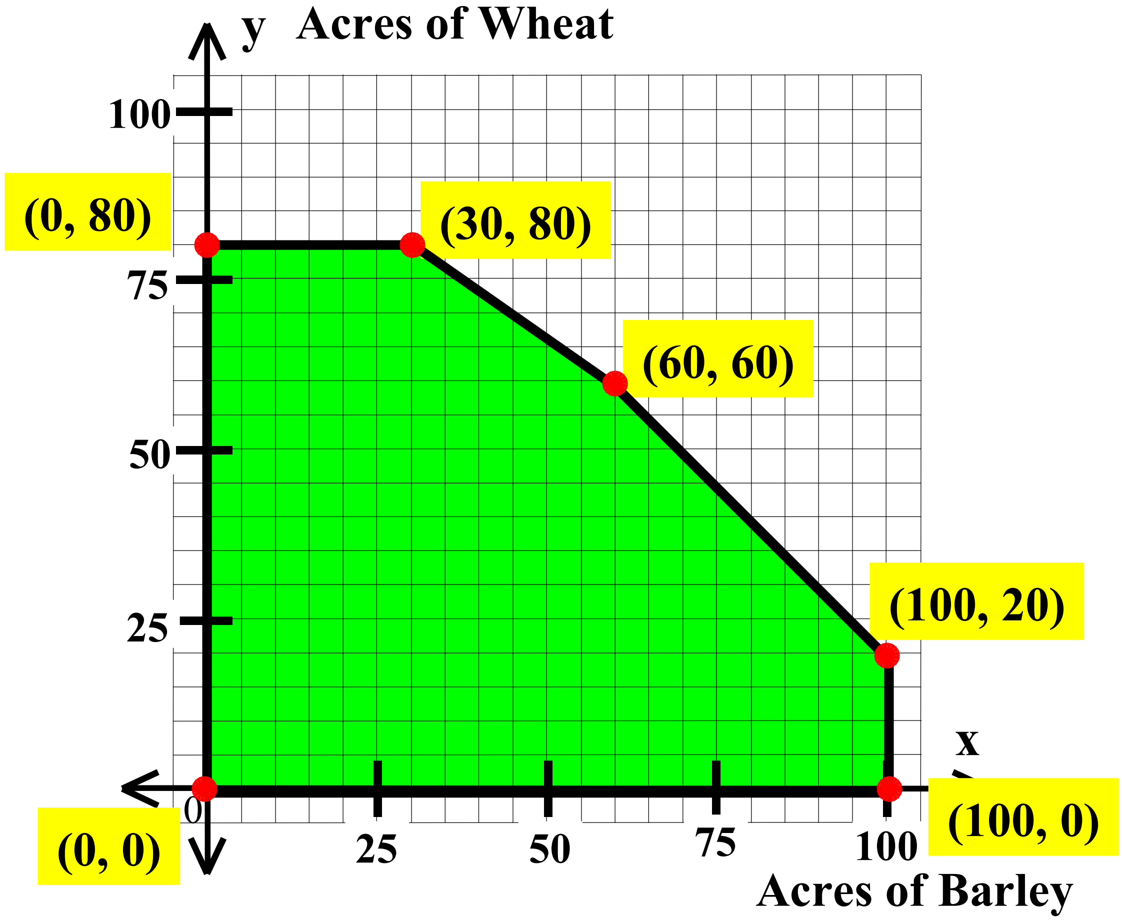
$x + y \leq 120$

$20x + 30y \leq 3000$

$x \geq 0 \quad y \geq 0$

Objective Function

$T = 1000x + 3000y$



Algebra II   Applying Systems of Linear Inequalities

$x \le 100$

$y \le 80$

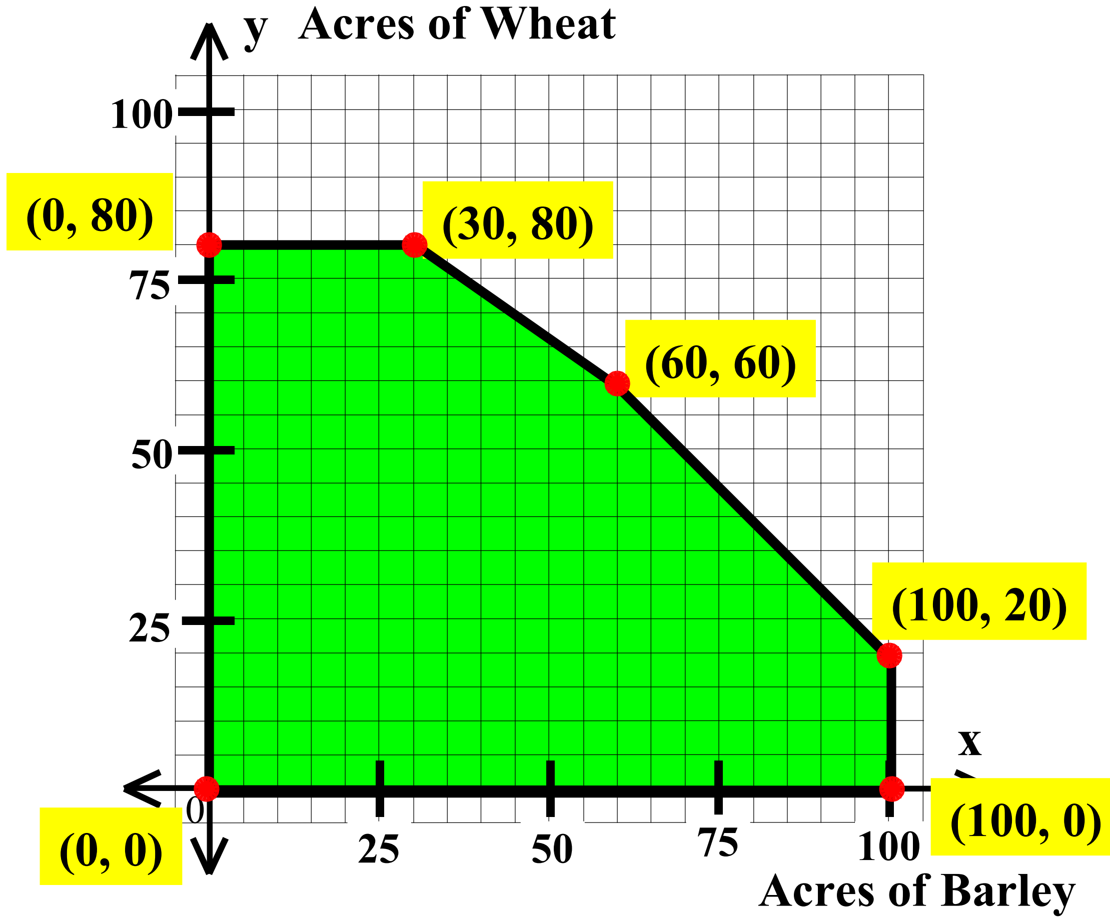
$x + y \le 120$

$20x + 30y \le 3000$

$x \ge 0 \quad y \ge 0$

Objective Function

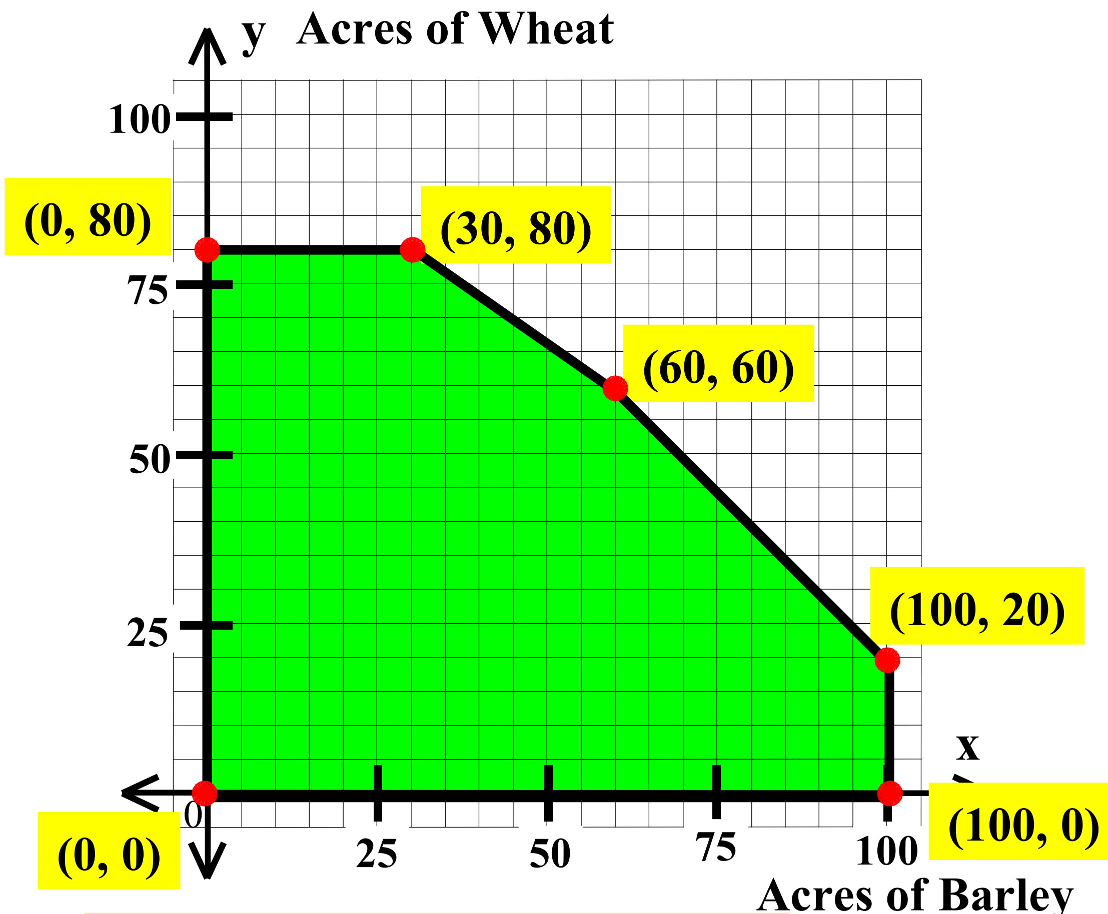
$T = 1000x + 3000y$



If T = 120,000 pounds,

Algebra II Applying Systems of Linear Inequalities

$x \le 100$
$y \le 80$
$x + y \le 120$
$20x + 30y \le 3000$
$x \ge 0 \quad y \ge 0$



Objective Function

$T = 1000x + 3000y$

If T = 120,000 pounds, then $1000x + 3000y = 120{,}000$.

Algebra II   Applying Systems of Linear Inequalities

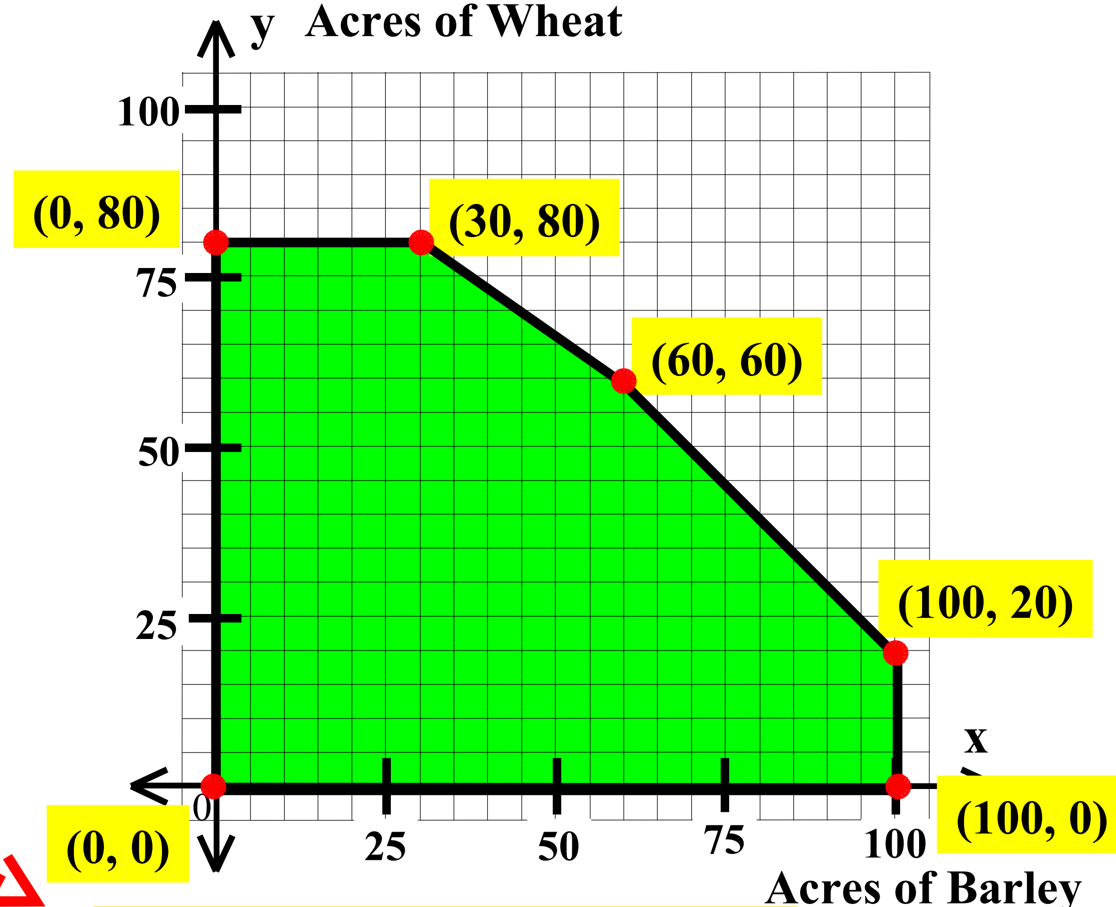
$x \leq 100$

$y \leq 80$

$x + y \leq 120$

$20x + 30y \leq 3000$

$x \geq 0 \quad y \geq 0$



Objective Function

$T = 1000x + 3000y$

If T = 120,000 pounds, then $1000x + 3000y = 120,000.$

Algebra II Applying Systems of Linear Inequalities

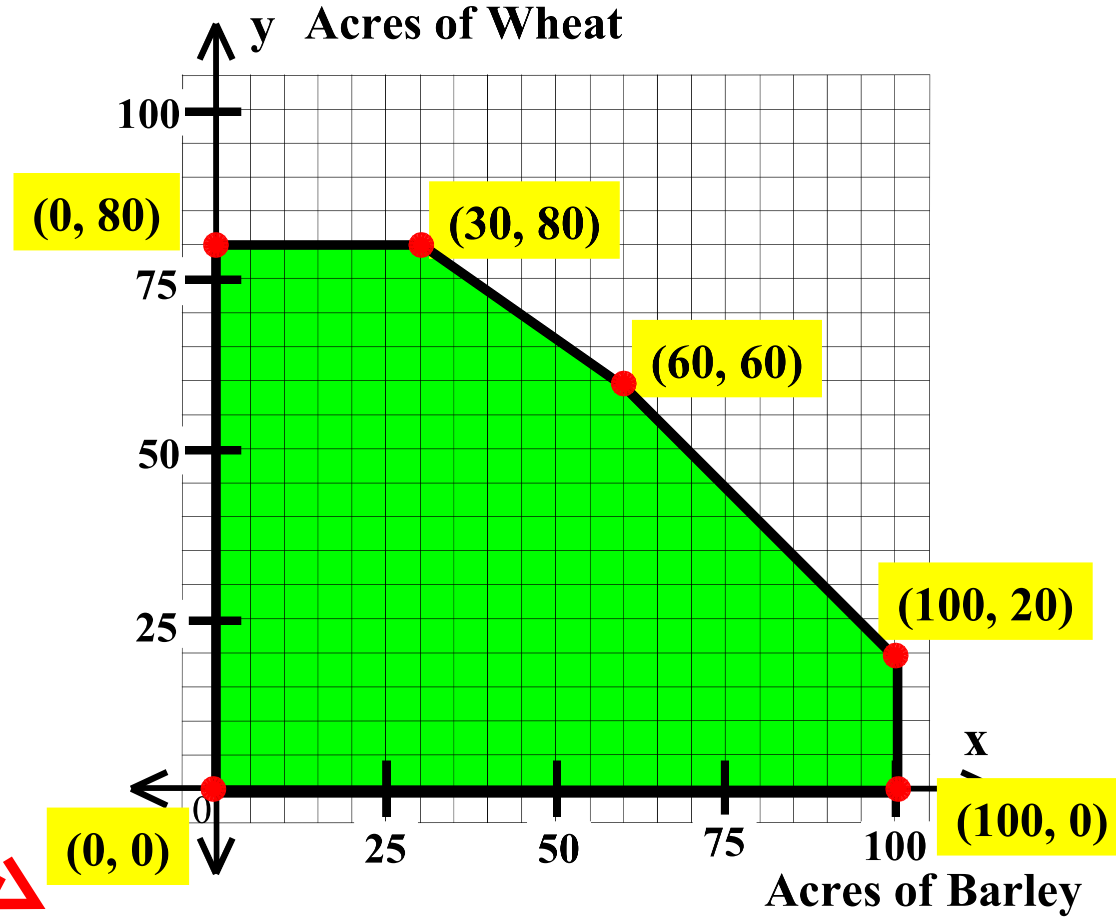
$x \leq 100$

$y \leq 80$

$x + y \leq 120$

$20x + 30y \leq 3000$

$x \geq 0 \quad y \geq 0$



Objective Function

$T = 1000x + 3000y$

If $T = 120{,}000$ pounds, then $1000x + 3000y = 120{,}000$.

This corresponds to the line $y = (-1/3)x + 40$.

Algebra II   Applying Systems of Linear Inequalities

$x \leq 100$

$y \leq 80$

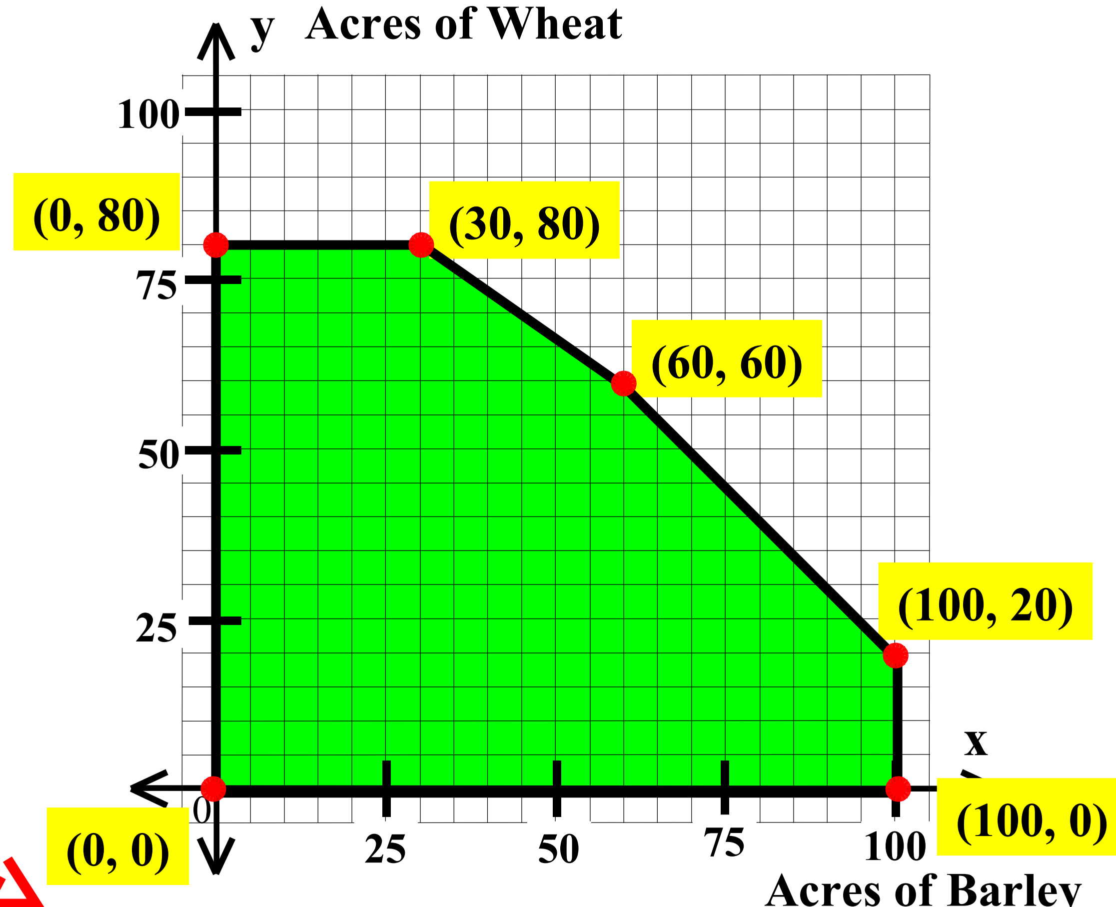
$x + y \leq 120$

$20x + 30y \leq 3000$

$x \geq 0 \qquad y \geq 0$

Objective Function

$T = 1000x + 3000y$



If $T = 120{,}000$ pounds, then $1000x + 3000y = 120{,}000$.

This corresponds to the line $y = (-1/3)x + 40$. (I solved for y.)

Algebra II   Applying Systems of Linear Inequalities

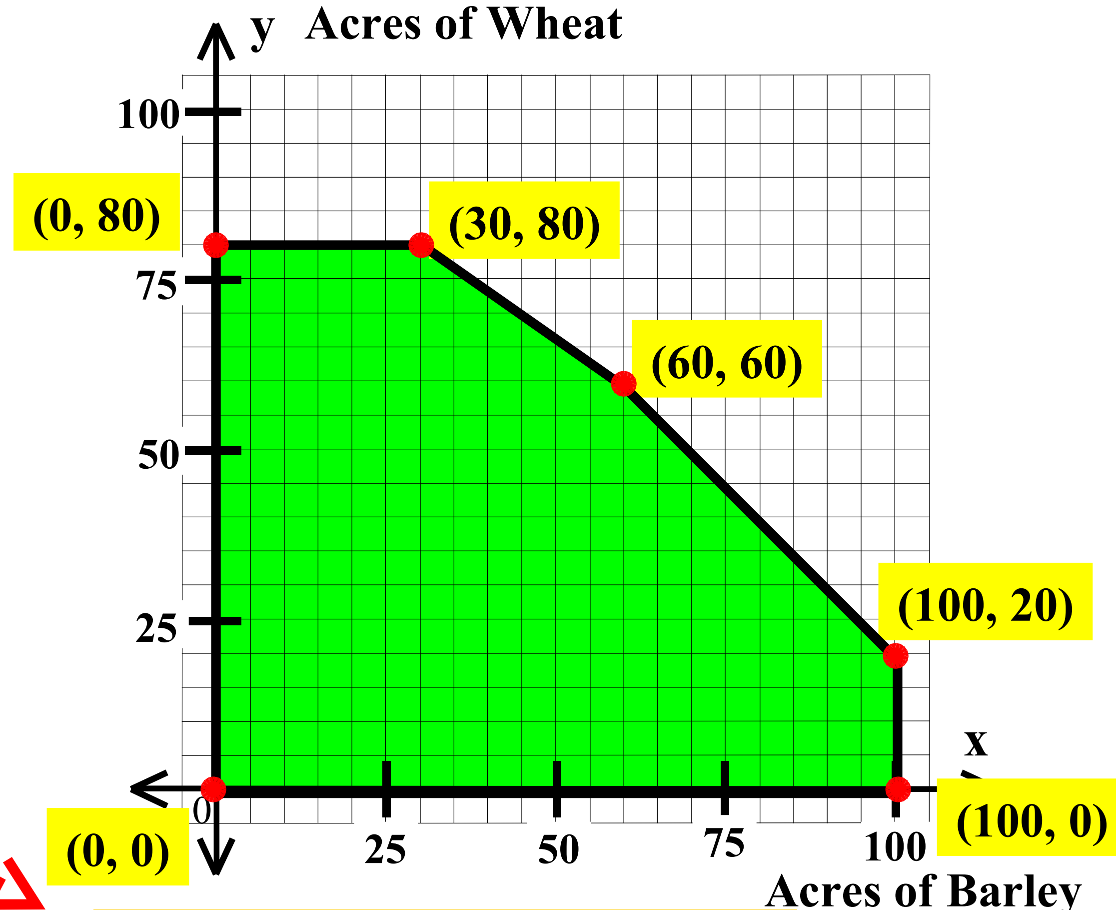
$x \le 100$

$y \le 80$

$x + y \le 120$

$20x + 30y \le 3000$

$x \ge 0 \quad y \ge 0$



Objective Function

$T = 1000x + 3000y$

If T = 120,000 pounds, then $1000x + 3000y = 120{,}000.$

This corresponds to the line $y = (-1/3)x + 40$. (I solved for y.)
Graphing this line,

Algebra II   Applying Systems of Linear Inequalities

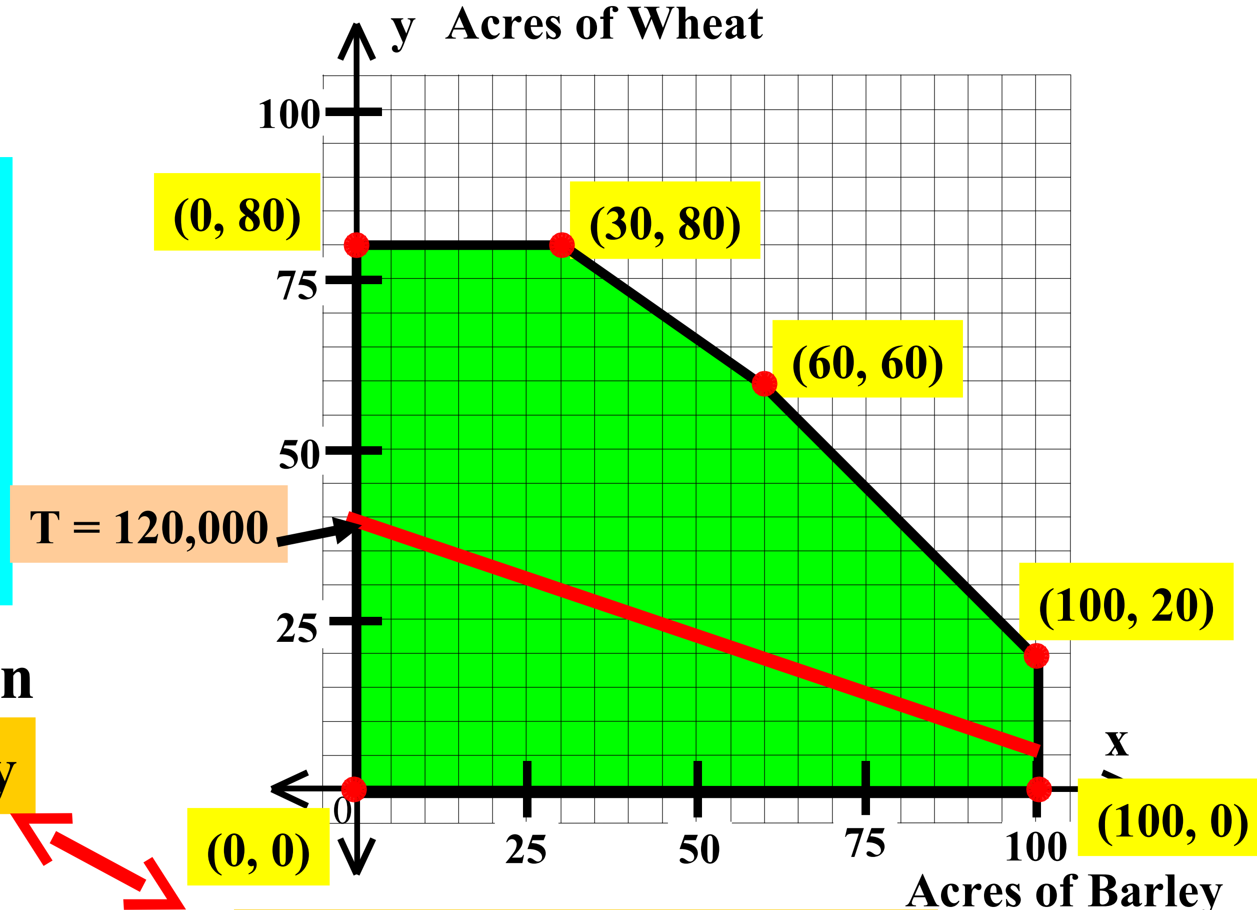
$x \leq 100$

$y \leq 80$

$x + y \leq 120$

$20x + 30y \leq 3000$

$x \geq 0 \qquad y \geq 0$



Objective Function

$T = 1000x + 3000y$

If T = 120,000 pounds, then $1000x + 3000y = 120{,}000.$

This corresponds to the line $y = (-1/3)x + 40$. (I solved for y.) Graphing this line,

Algebra II   Applying Systems of Linear Inequalities

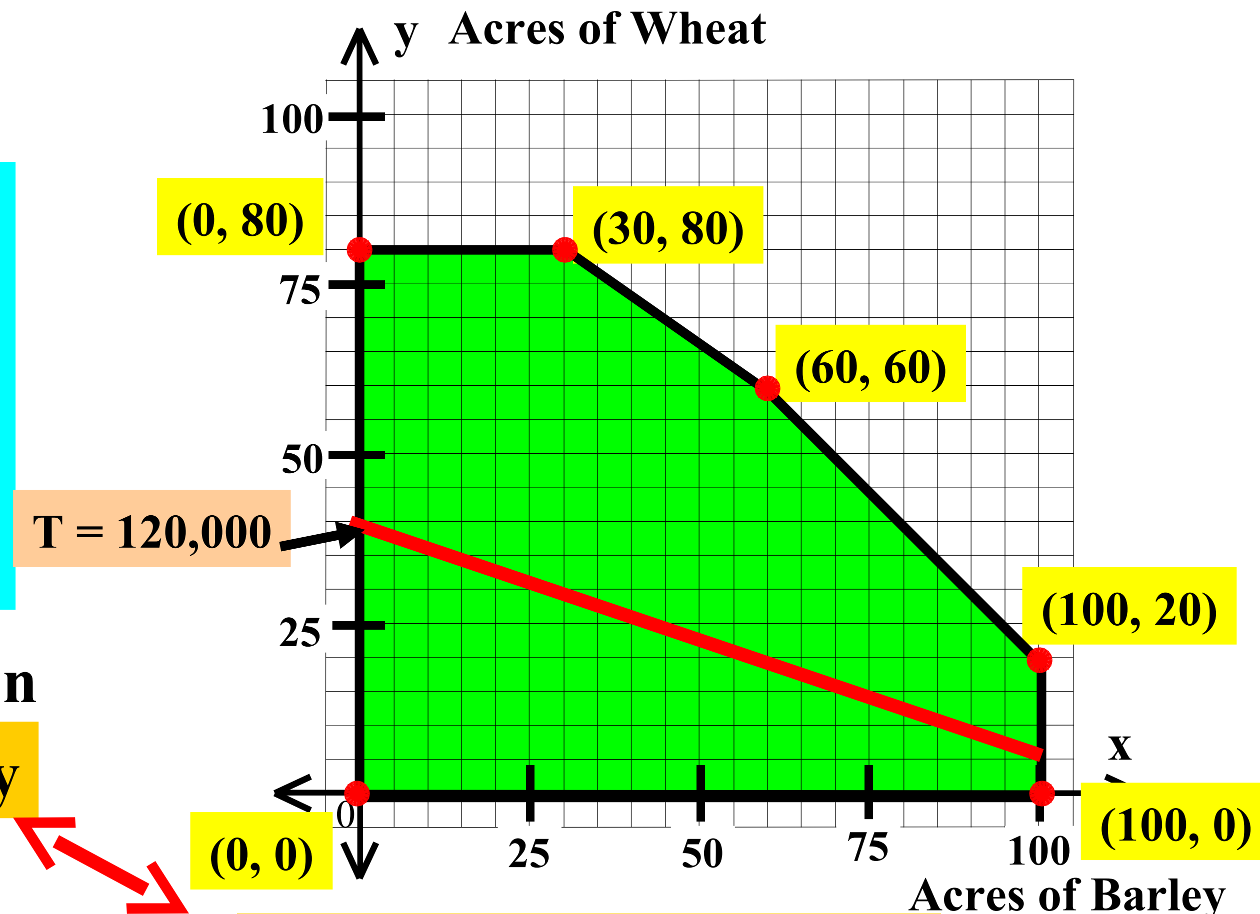
$x \leq 100$

$y \leq 80$

$x + y \leq 120$

$20x + 30y \leq 3000$

$x \geq 0 \qquad y \geq 0$



Objective Function

$T = 1000x + 3000y$

If T = 120,000 pounds, then $1000x + 3000y = 120{,}000$.

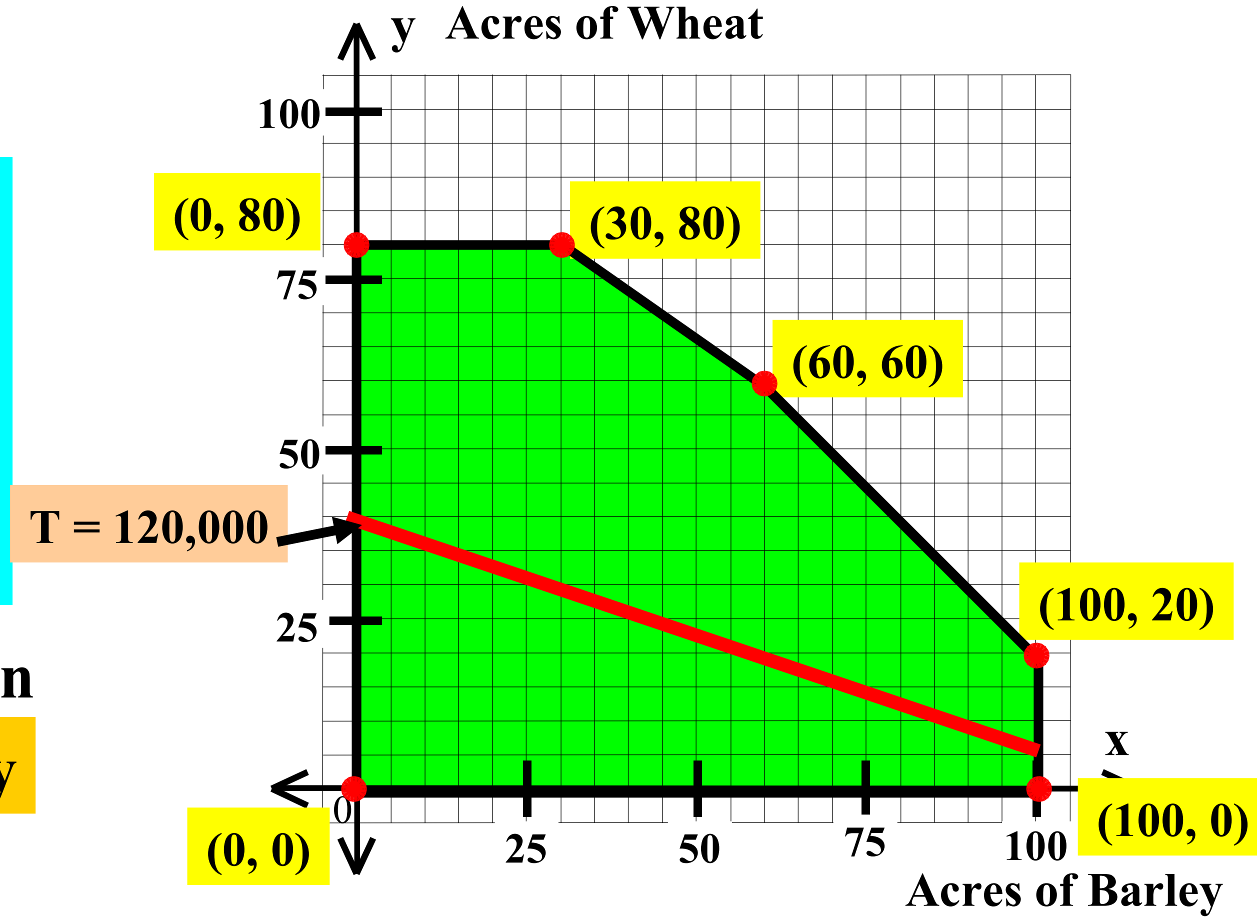
This corresponds to the line $y = (-1/3)x + 40$. (I solved for y.) Graphing this line, it is clear that there are many ways to achieve a total harvest of 120,000 pounds.

Algebra II   Applying Systems of Linear Inequalities

$$x \le 100$$
$$y \le 80$$
$$x + y \le 120$$
$$20x + 30y \le 3000$$
$$x \ge 0 \qquad y \ge 0$$

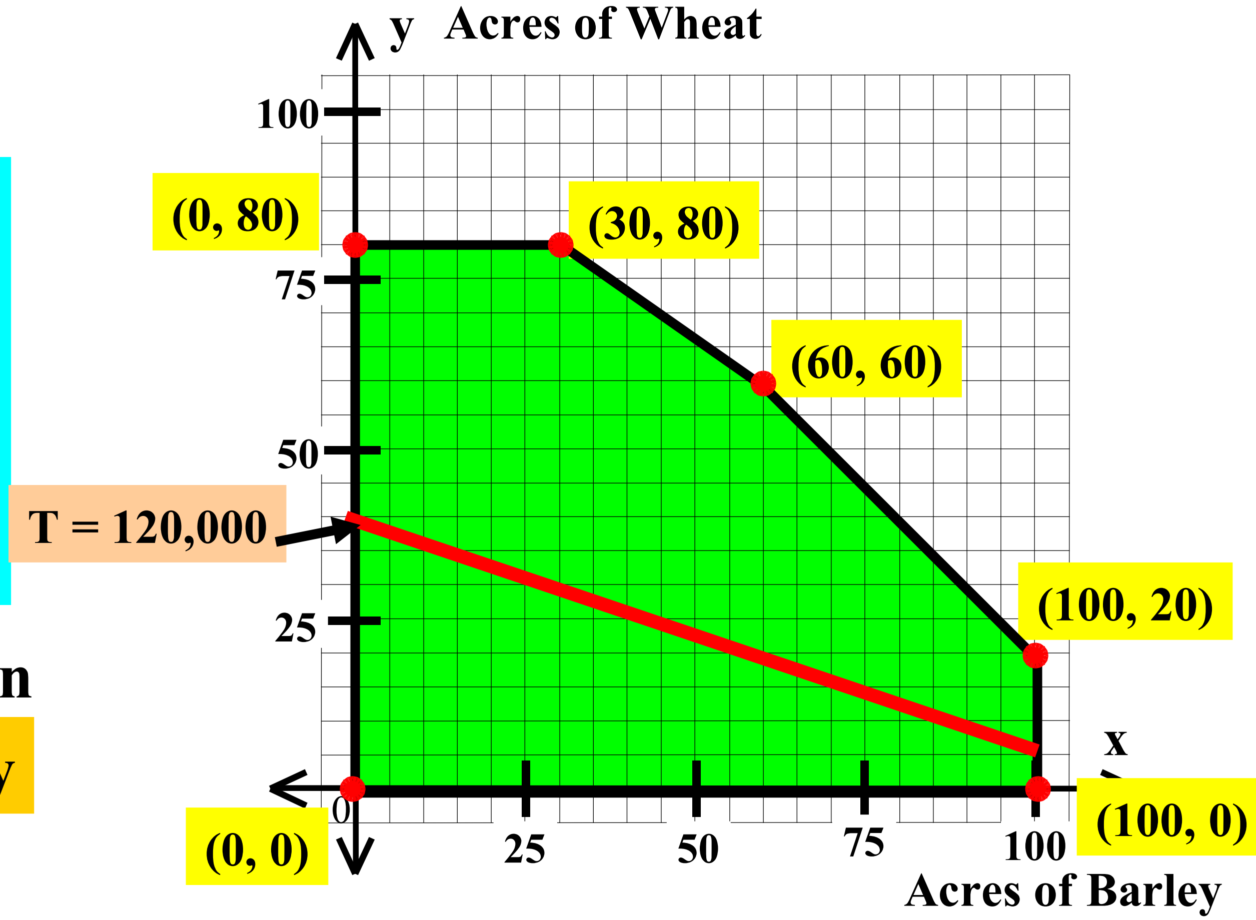
Objective Function

$$T = 1000x + 3000y$$



Algebra II Applying Systems of Linear Inequalities

$$x \le 100$$
$$y \le 80$$
$$x + y \le 120$$
$$20x + 30y \le 3000$$
$$x \ge 0 \qquad y \ge 0$$



Objective Function

$$T = 1000x + 3000y$$

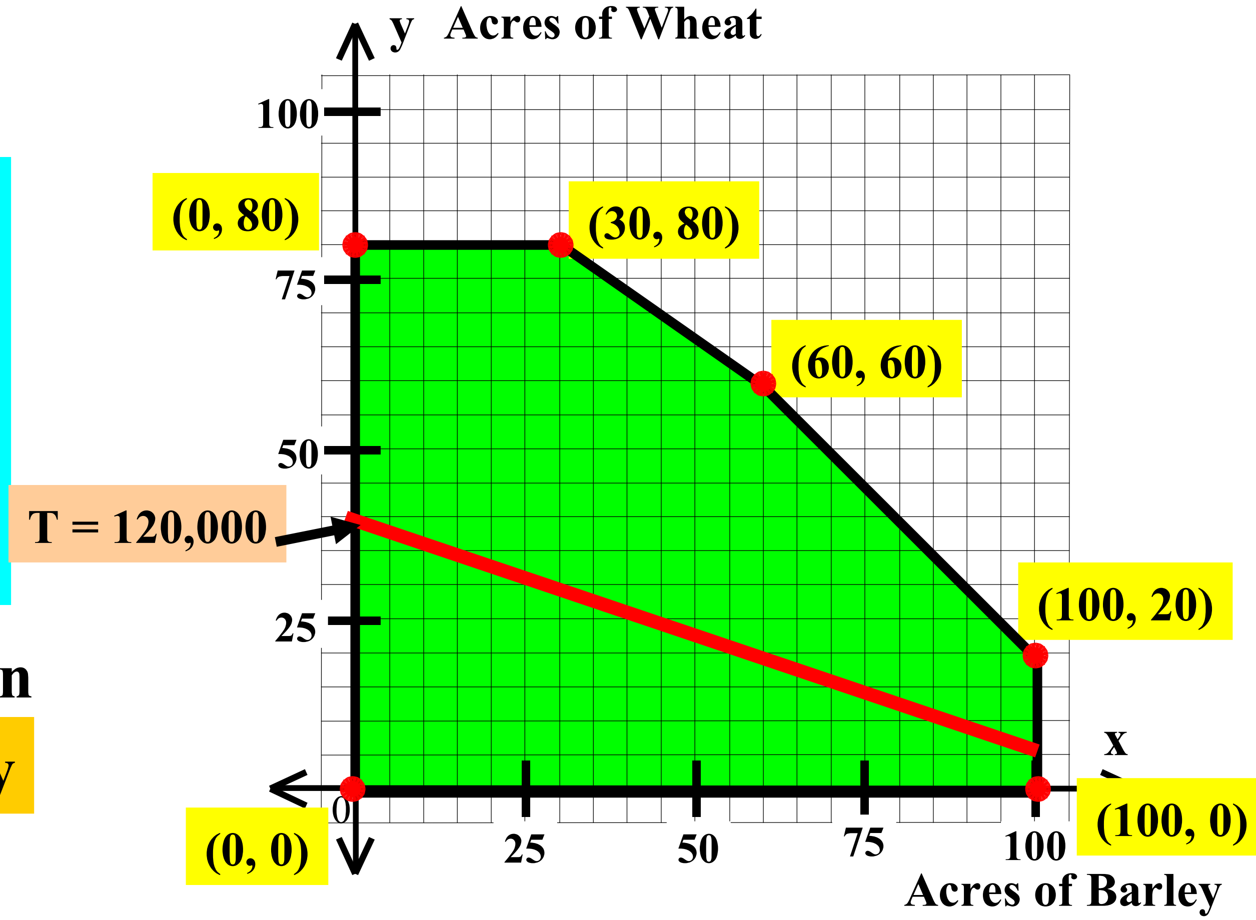
If T = 300,000 pounds,

Algebra II   Applying Systems of Linear Inequalities

$x \le 100$
$y \le 80$
$x + y \le 120$
$20x + 30y \le 3000$
$x \ge 0 \quad y \ge 0$

Objective Function

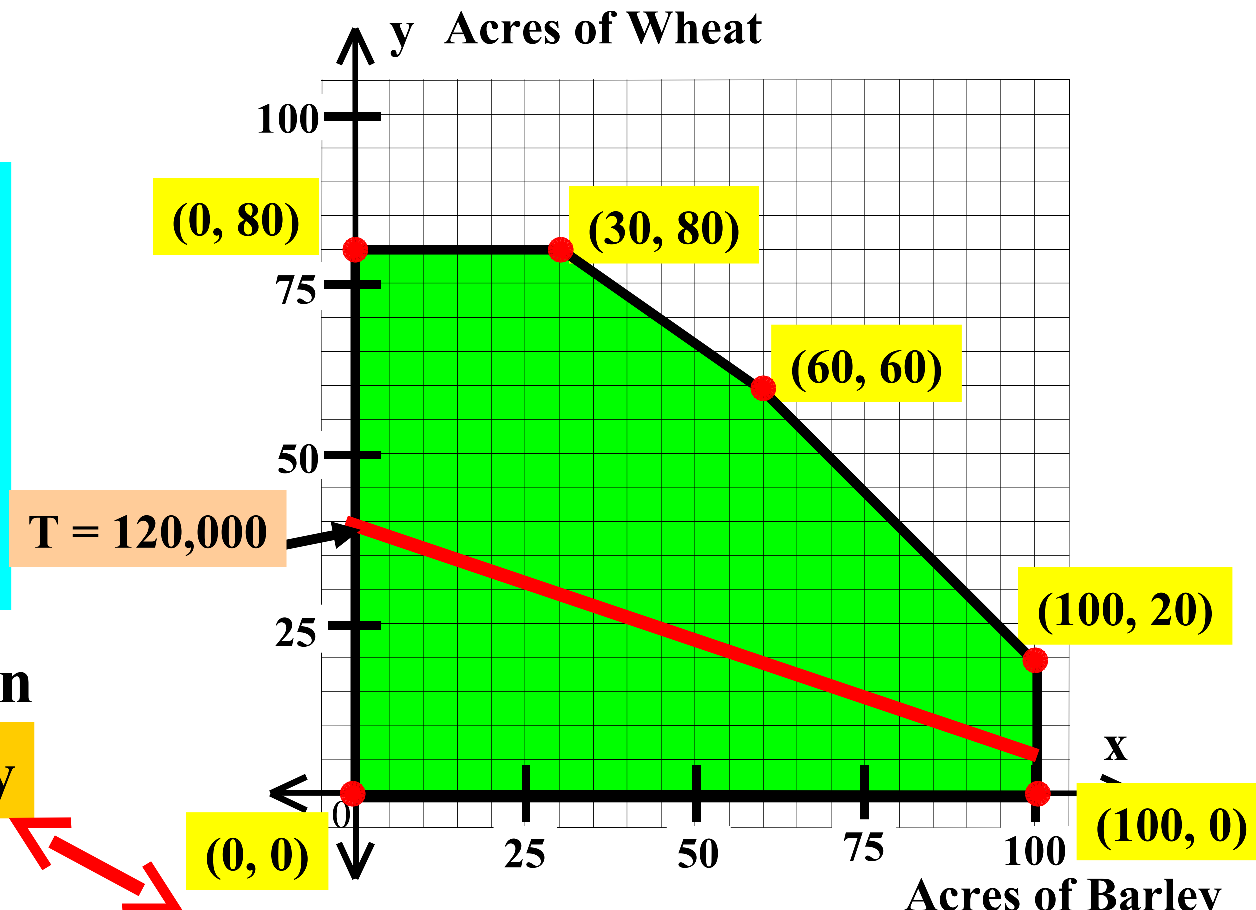
$T = 1000x + 3000y$



If T = 300,000 pounds, then 1000x + 3000y = 300,000.

Algebra II   Applying Systems of Linear Inequalities

$x \le 100$
$y \le 80$
$x + y \le 120$
$20x + 30y \le 3000$
$x \ge 0 \quad y \ge 0$



Objective Function

$T = 1000x + 3000y$

If T = 300,000 pounds, then $1000x + 3000y = 300,000.$

Algebra II   Applying Systems of Linear Inequalities

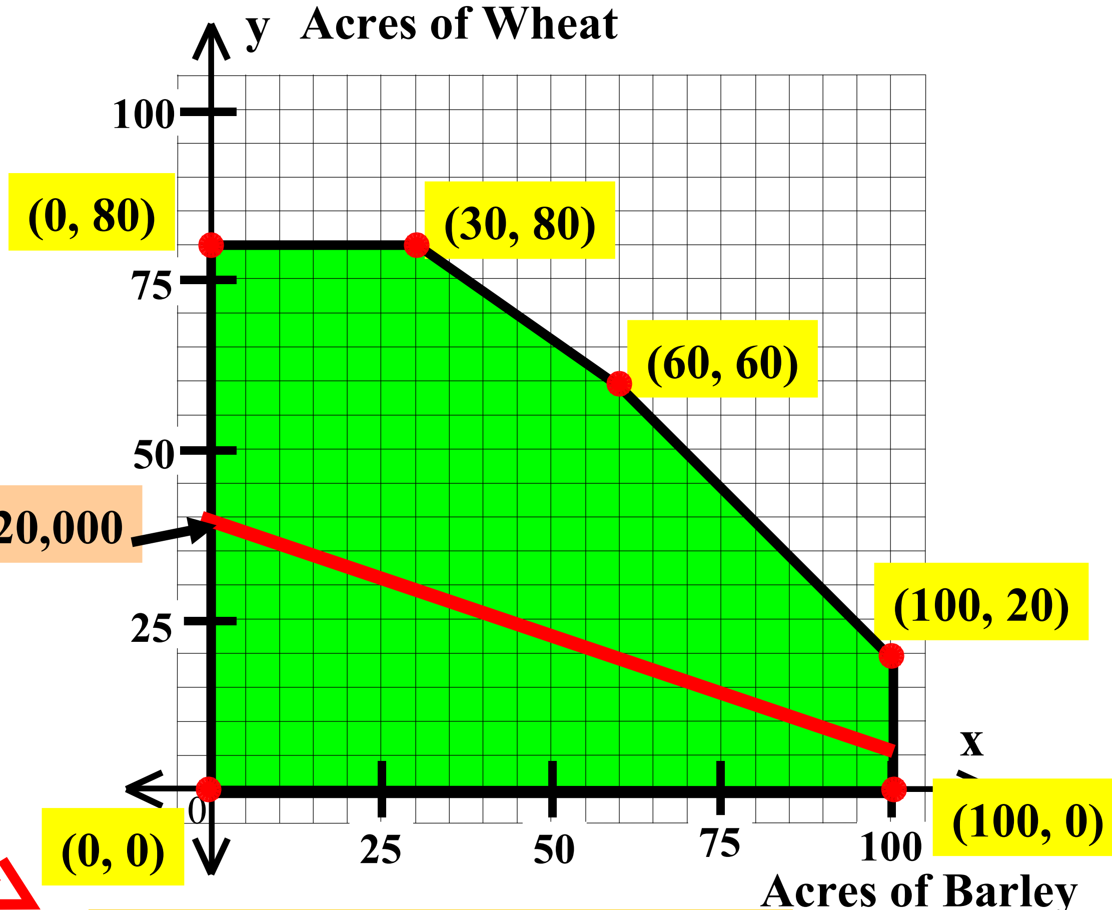
$x \leq 100$

$y \leq 80$

$x + y \leq 120$

$20x + 30y \leq 3000$

$x \geq 0 \qquad y \geq 0$



Objective Function

$T = 1000x + 3000y$

If T = 300,000 pounds, then $1000x + 3000y = 300{,}000$.

This corresponds to the line $y = (-1/3)x + 100$.

Algebra II Applying Systems of Linear Inequalities

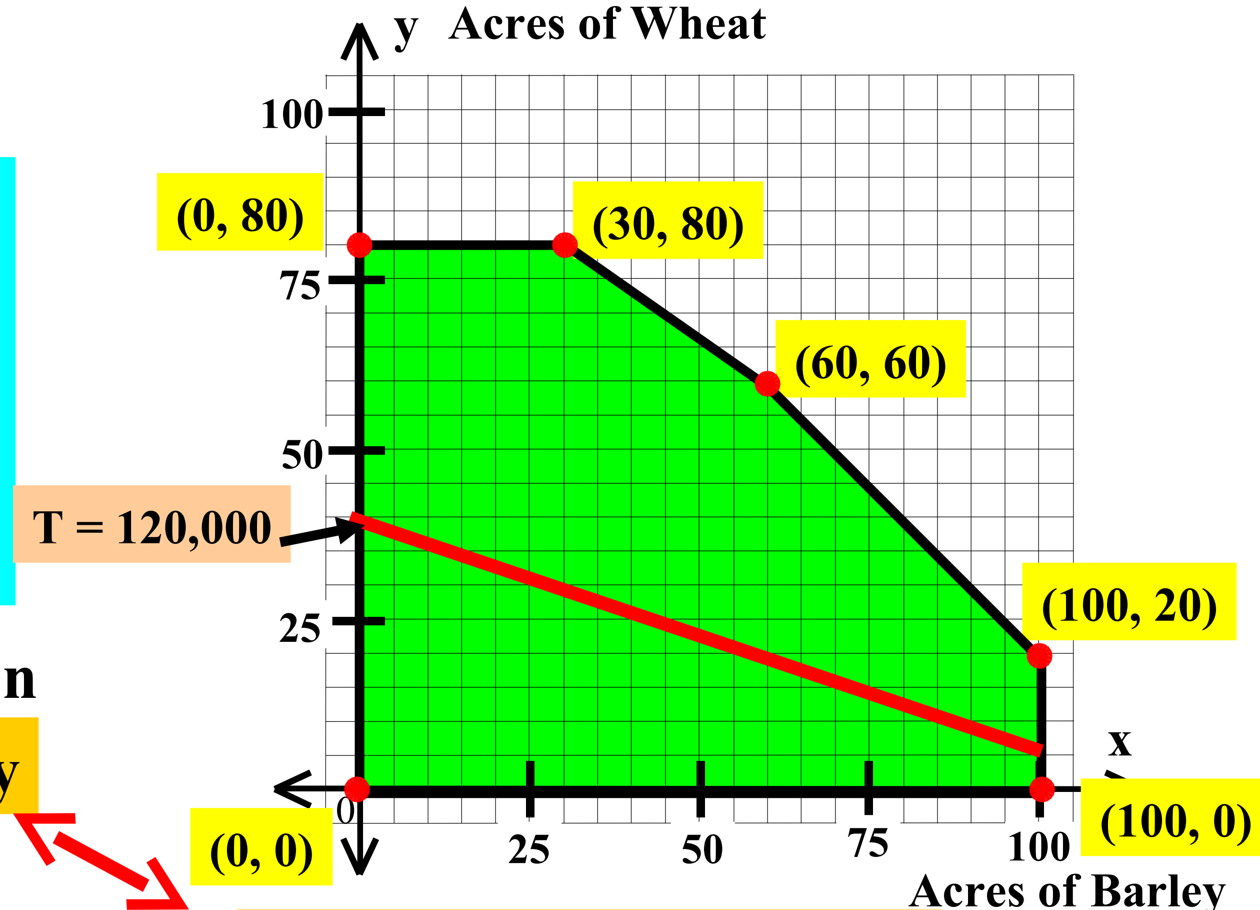
$x \le 100$

$y \le 80$

$x + y \le 120$

$20x + 30y \le 3000$

$x \ge 0 \qquad y \ge 0$



Objective Function

$T = 1000x + 3000y$

If T = 300,000 pounds, then $1000x + 3000y = 300{,}000$.

This corresponds to the line $y = (-1/3)x + 100$. (I solved for y.)

Algebra II Applying Systems of Linear Inequalities

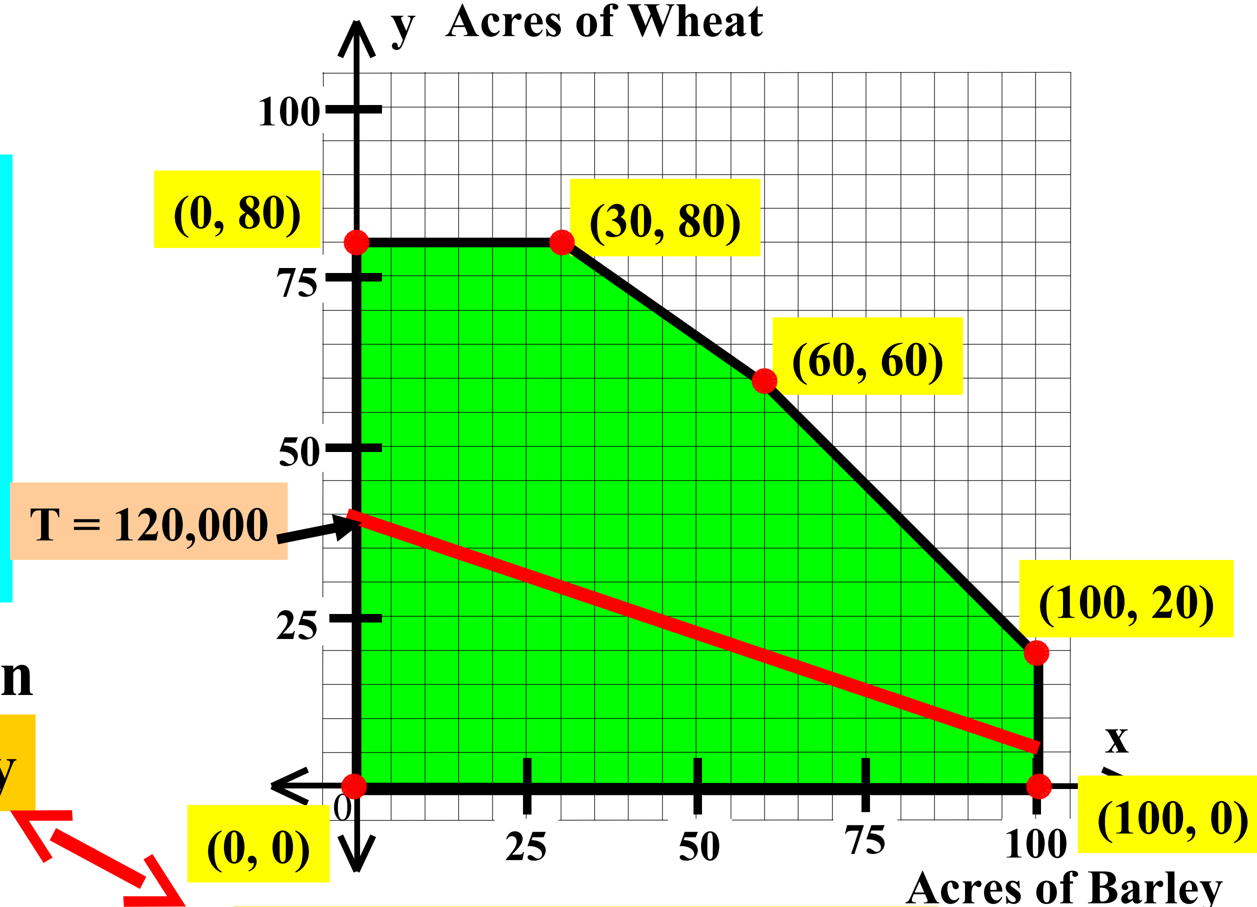
$x \leq 100$

$y \leq 80$

$x + y \leq 120$

$20x + 30y \leq 3000$

$x \geq 0 \qquad y \geq 0$



Objective Function

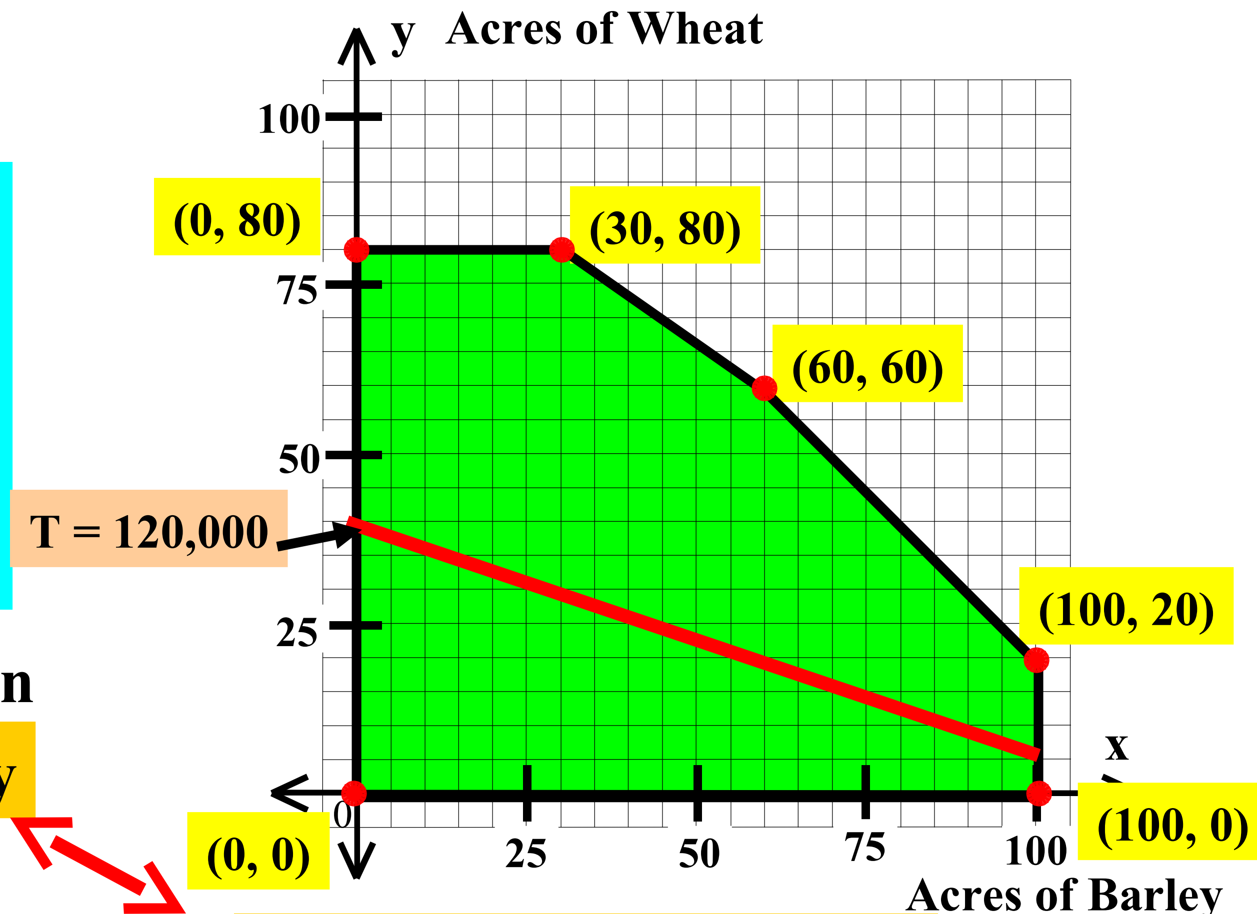
$T = 1000x + 3000y$

If T = 300,000 pounds, then $1000x + 3000y = 300{,}000$.

This corresponds to the line $y = (-1/3)x + 100$.

Algebra II Applying Systems of Linear Inequalities

$x \leq 100$
$y \leq 80$
$x + y \leq 120$
$20x + 30y \leq 3000$
$x \geq 0 \quad y \geq 0$



Objective Function

$T = 1000x + 3000y$

If T = 300,000 pounds, then $1000x + 3000y = 300{,}000$.

This corresponds to the line $y = (-1/3)x + 100$. Here is the graph of this line.

Algebra II Applying Systems of Linear Inequalities

$x \le 100$

$y \le 80$

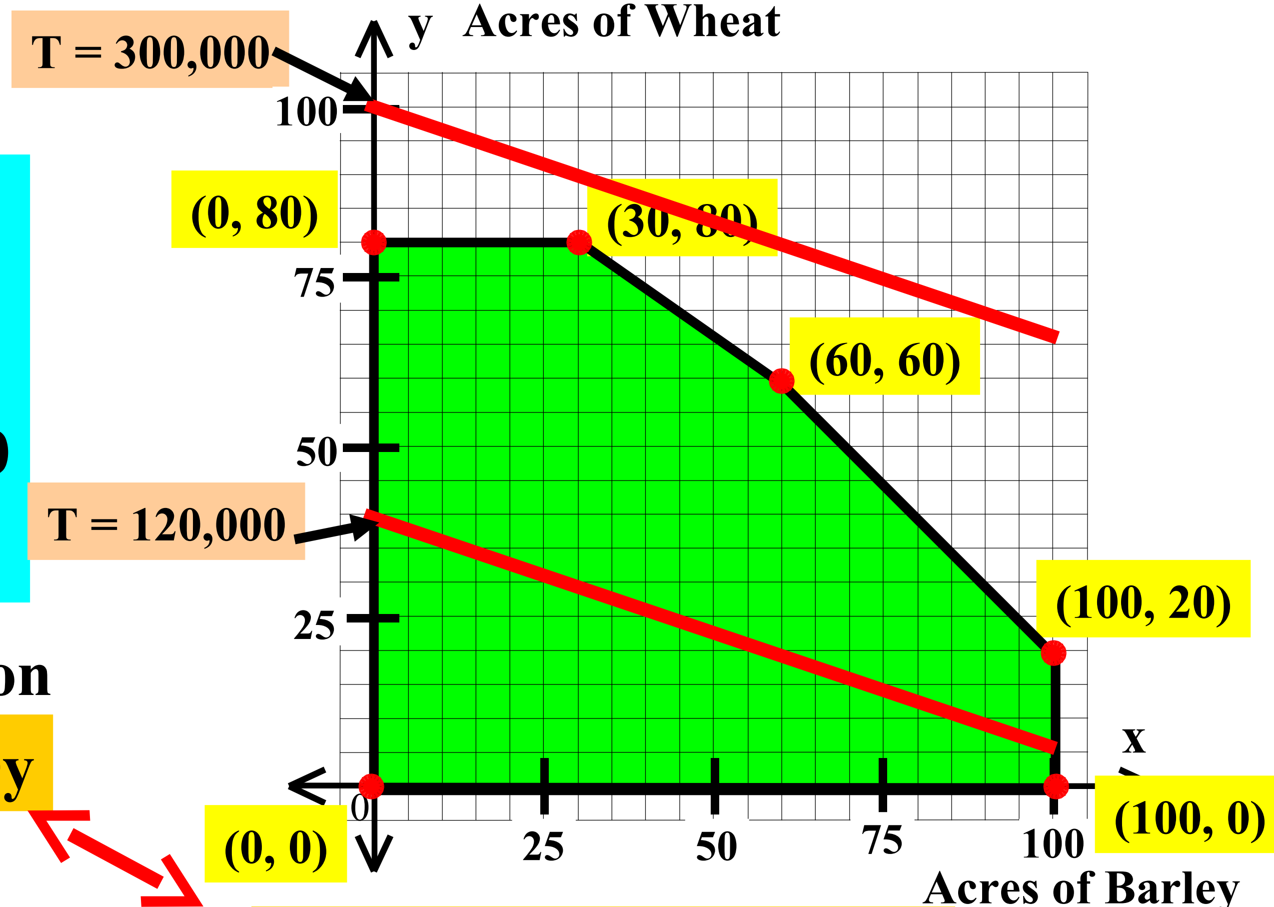
$x + y \le 120$

$20x + 30y \le 3000$

$x \ge 0 \quad y \ge 0$

Objective Function

$T = 1000x + 3000y$

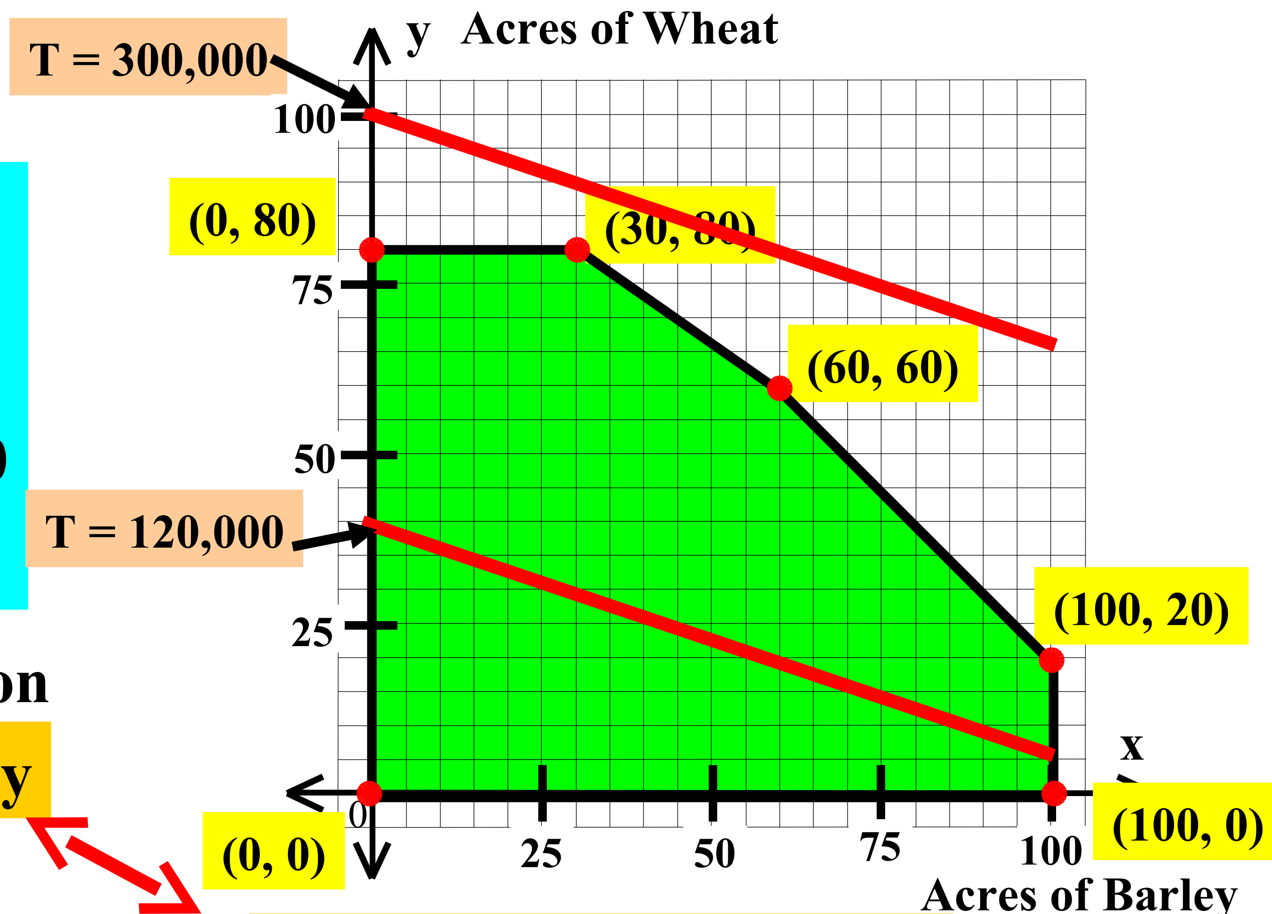


If T = 300,000 pounds, then $1000x + 3000y = 300{,}000$.

This corresponds to the line $y = (-1/3)x + 100$. Here is the graph of this line.

Algebra II   Applying Systems of Linear Inequalities

$x \le 100$
$y \le 80$
$x + y \le 120$
$20x + 30y \le 3000$
$x \ge 0 \quad y \ge 0$



Objective Function

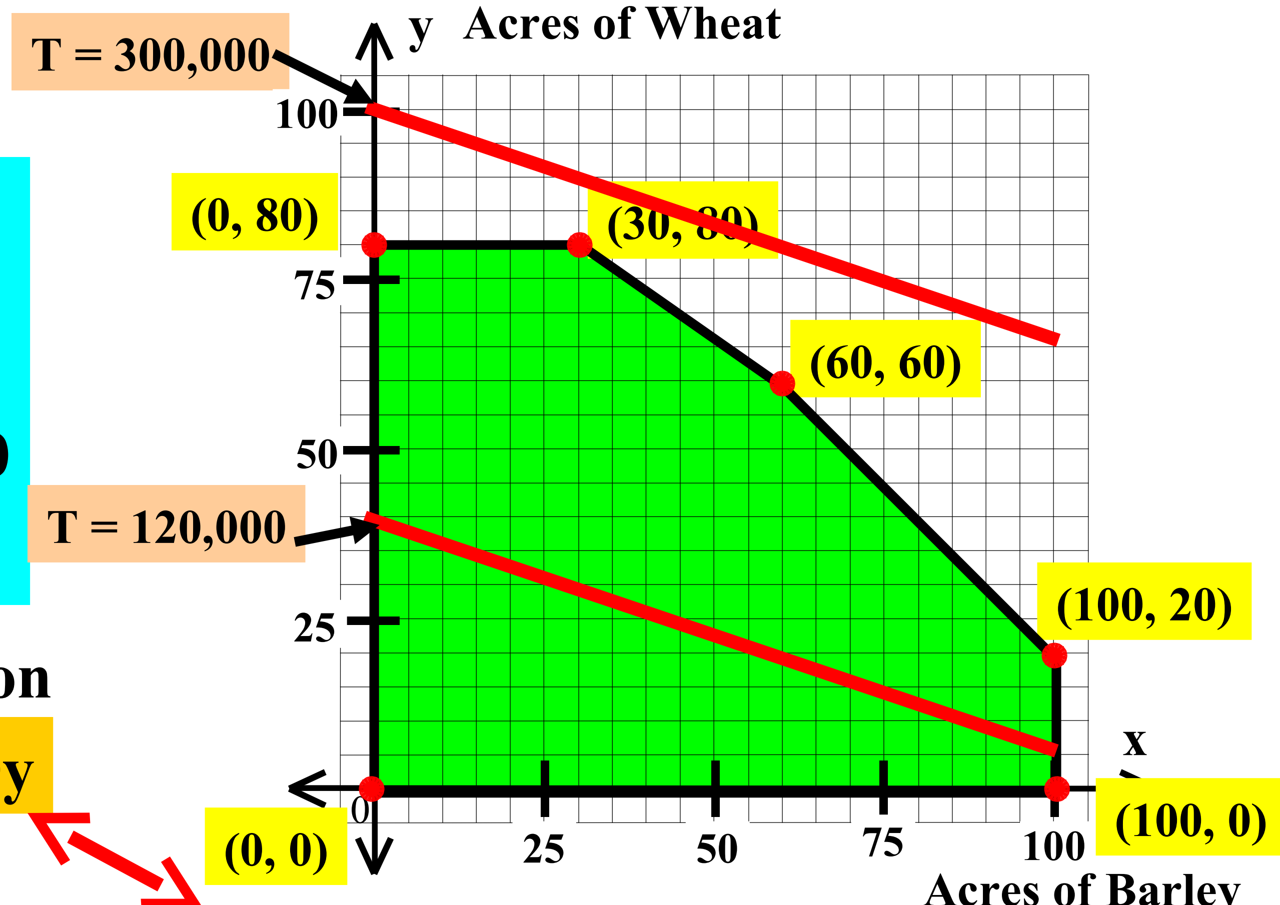
$T = 1000x + 3000y$

If T = 300,000 pounds, then $1000x + 3000y = 300{,}000$.

This corresponds to the line $y = (-1/3)x + 100$.

Algebra II Applying Systems of Linear Inequalities

$x \le 100$
$y \le 80$
$x + y \le 120$
$20x + 30y \le 3000$
$x \ge 0 \quad y \ge 0$



Objective Function

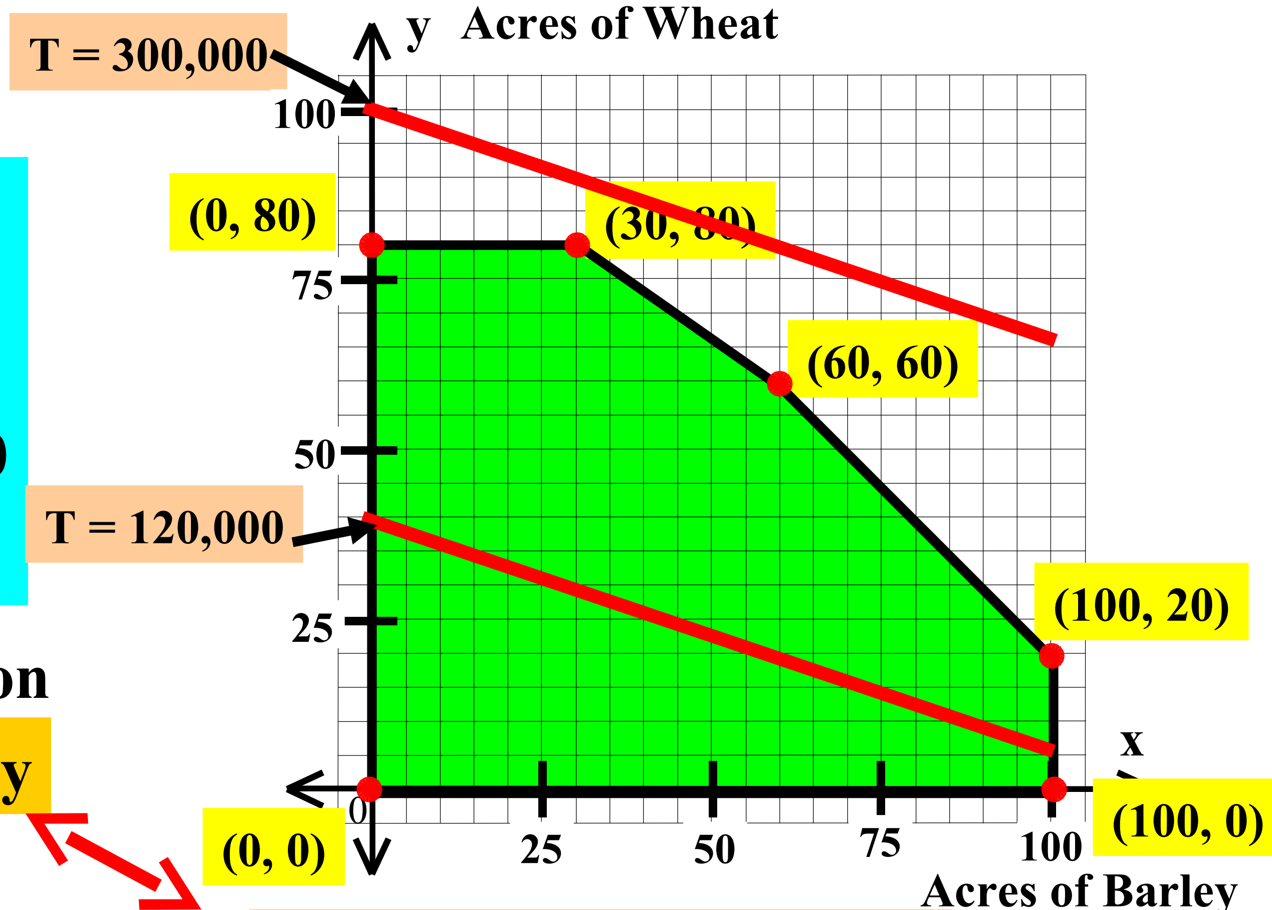
$T = 1000x + 3000y$

If T = 300,000 pounds, then $1000x + 3000y = 300{,}000$.

This corresponds to the line $y = (-1/3)x + 100$. It is clear that it is not possible to achieve a total harvest of 300,000 pounds.

Algebra II Applying Systems of Linear Inequalities

$x \leq 100$
$y \leq 80$
$x + y \leq 120$
$20x + 30y \leq 3000$
$x \geq 0 \quad y \geq 0$



Objective Function

T = 1000x + 3000y

If T = 300,000 pounds, then $1000x + 3000y = 300{,}000$.

This corresponds to the line $y = (-1/3)x + 100$. It is clear that it is not possible to achieve a total harvest of 300,000 pounds. (The line does not intersect the 'green' shaded region.)

Algebra II Applying Systems of Linear Inequalities

$x \leq 100$

$y \leq 80$

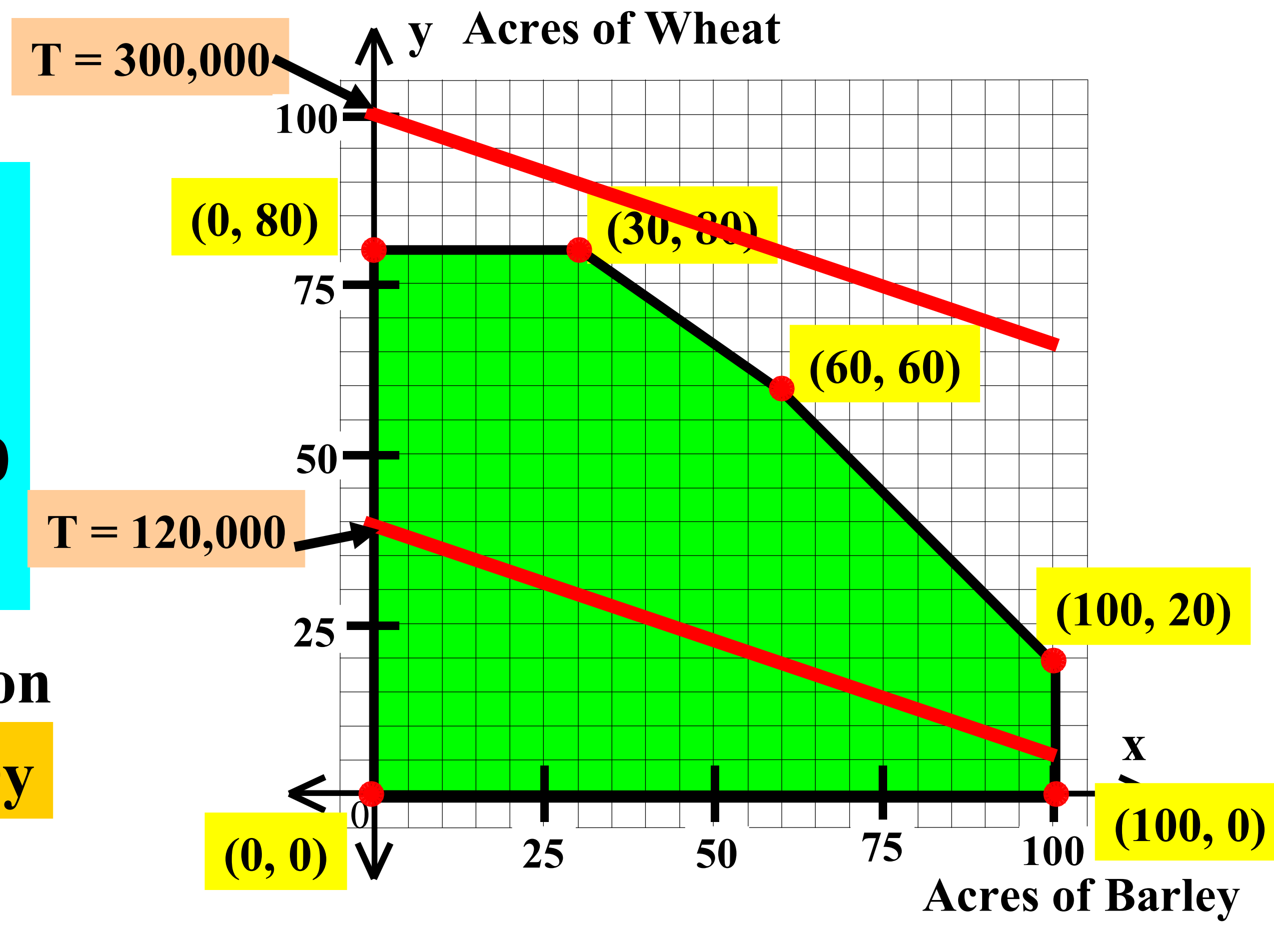
$x + y \leq 120$

$20x + 30y \leq 3000$

$x \geq 0 \quad y \geq 0$

Objective Function

$T = 1000x + 3000y$

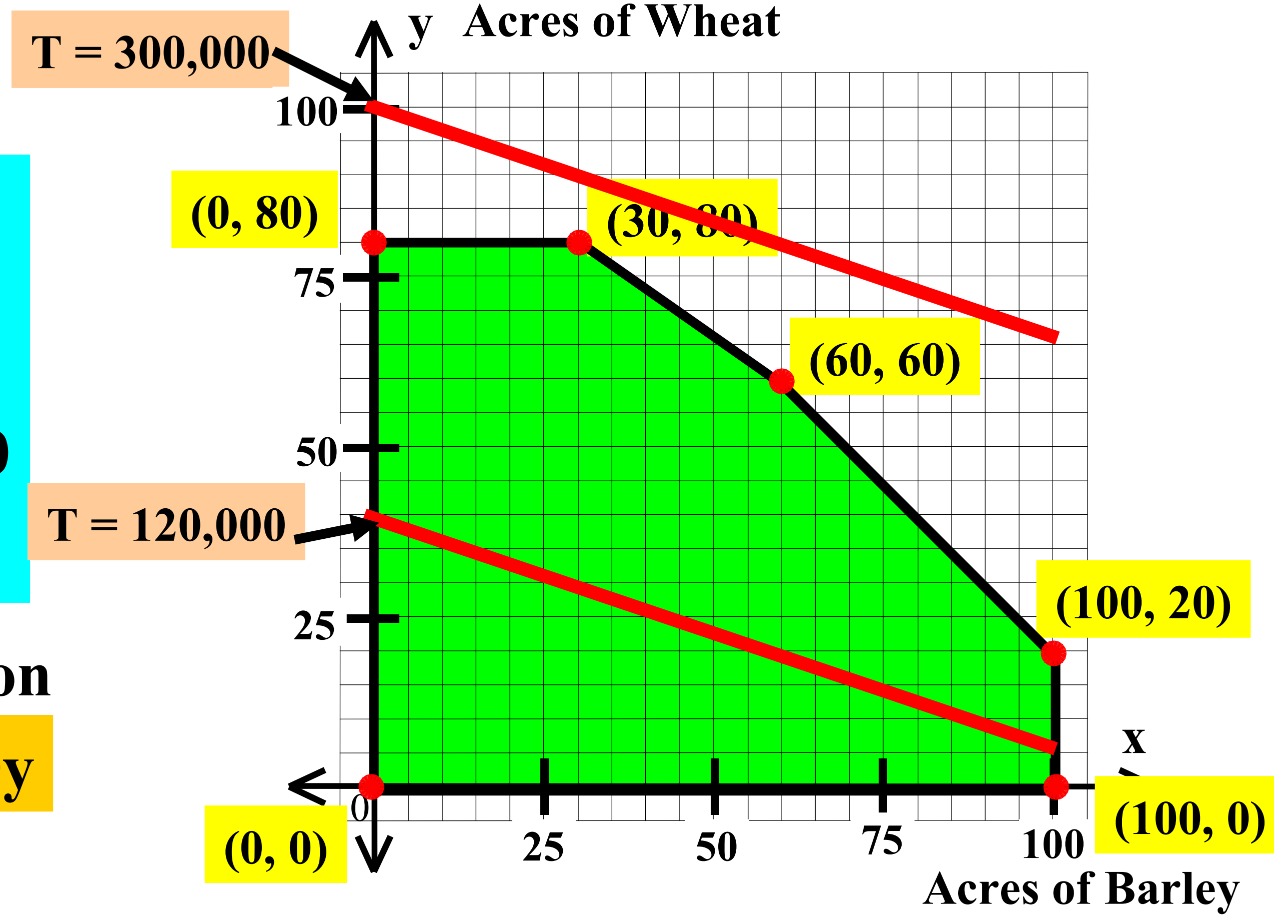


Algebra II Applying Systems of Linear Inequalities

$$x \leq 100$$
$$y \leq 80$$
$$x + y \leq 120$$
$$20x + 30y \leq 3000$$
$$x \geq 0 \qquad y \geq 0$$

Objective Function

$$T = 1000x + 3000y$$



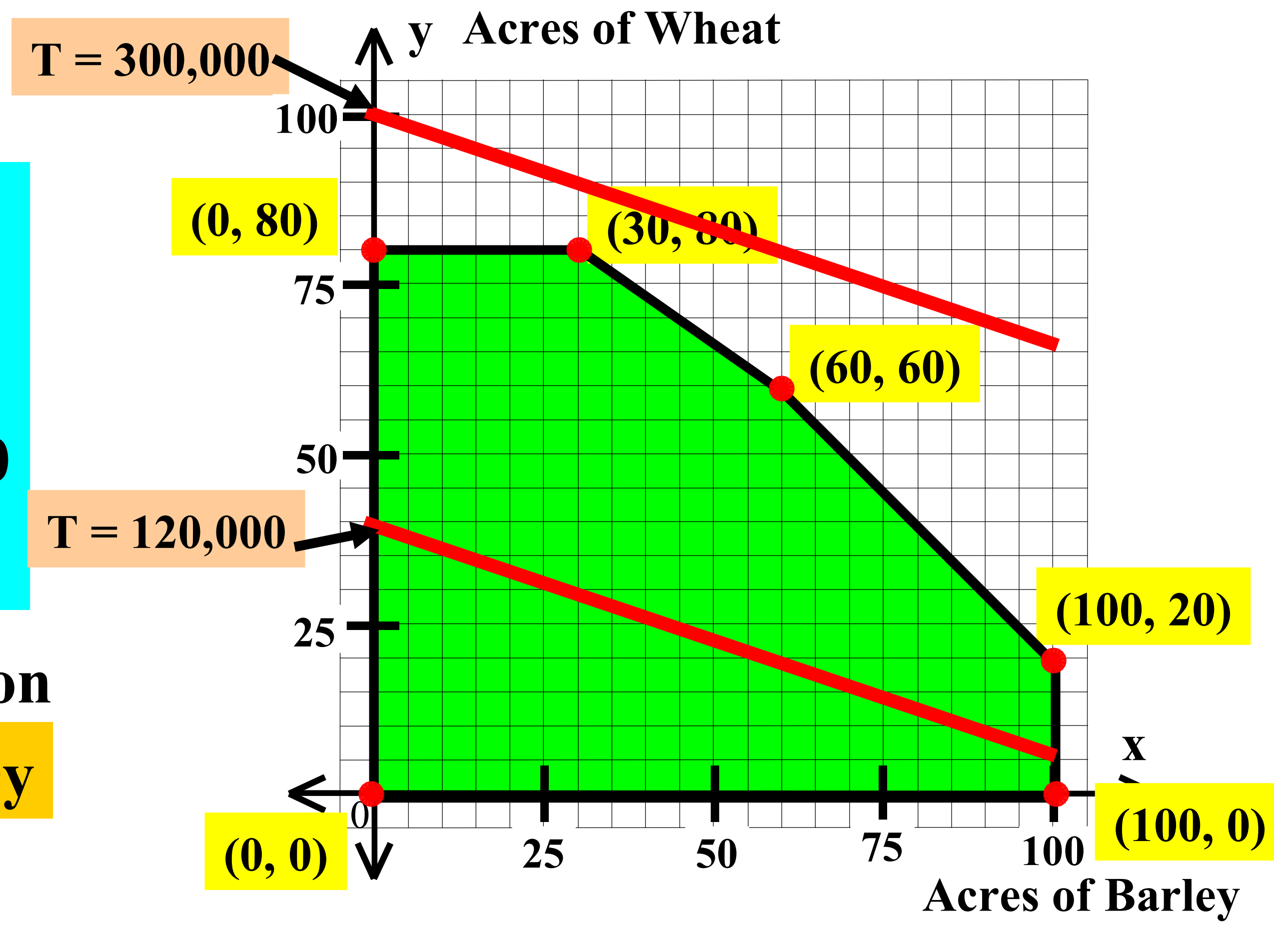
Finally, let's consider a total harvest of 180,000 pounds.

Algebra II Applying Systems of Linear Inequalities

$x \le 100$
$y \le 80$
$x + y \le 120$
$20x + 30y \le 3000$
$x \ge 0 \quad y \ge 0$

Objective Function

$T = 1000x + 3000y$



Finally, let's consider a total harvest of 180,000 pounds.

This corresponds to the equation $1000x + 3000y = 180{,}000$.

Algebra II Applying Systems of Linear Inequalities

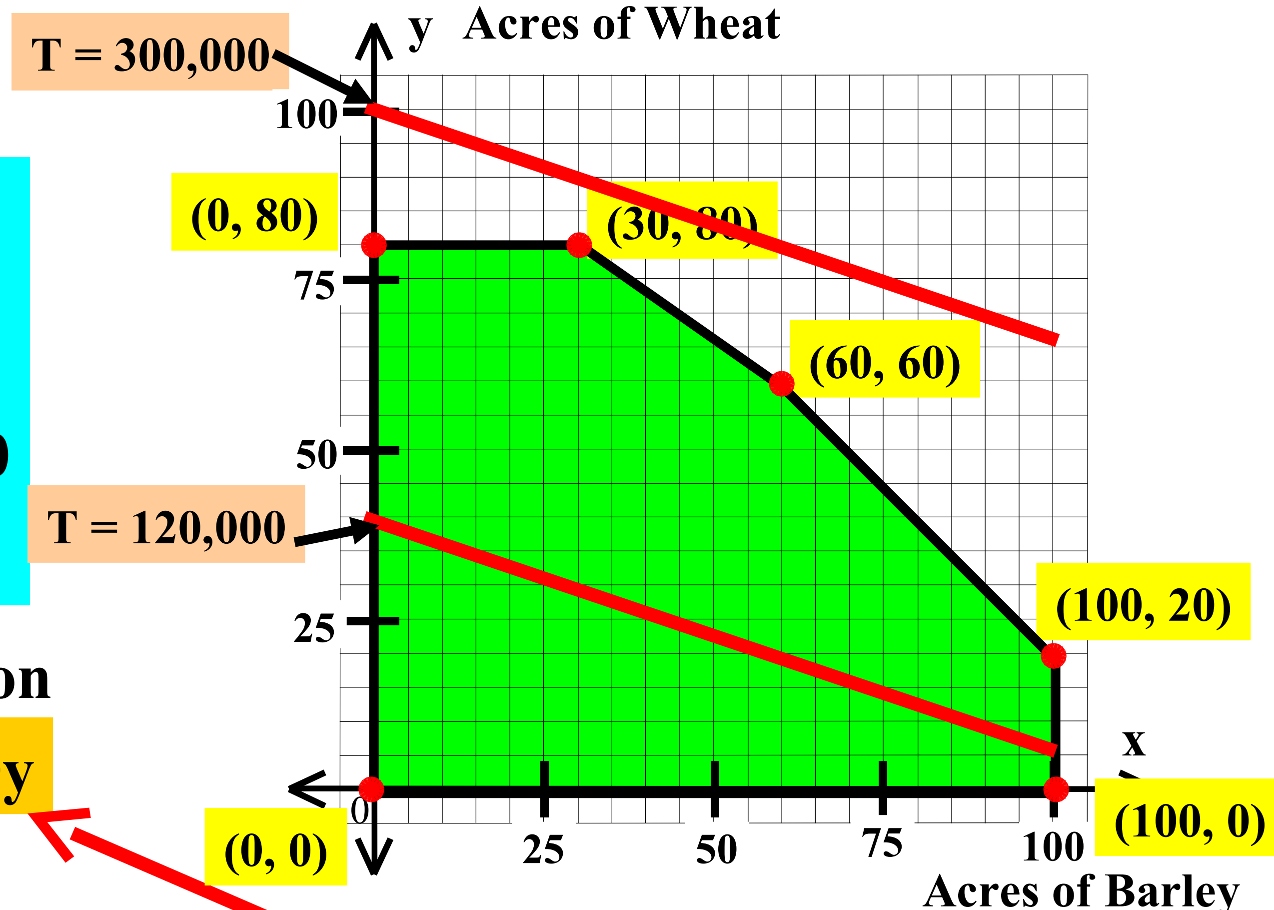
$x \leq 100$

$y \leq 80$

$x + y \leq 120$

$20x + 30y \leq 3000$

$x \geq 0 \quad y \geq 0$



Objective Function

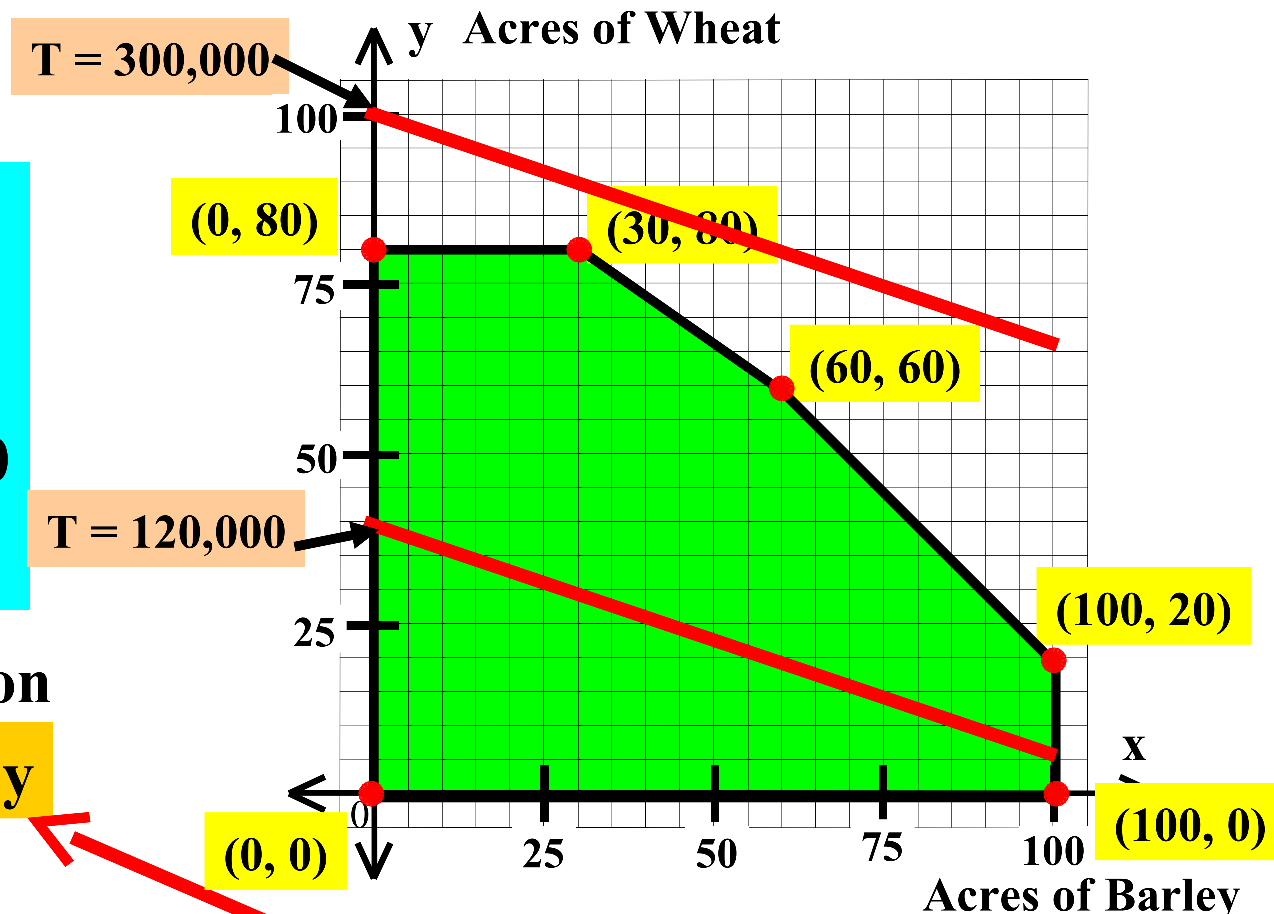
$T = 1000x + 3000y$

Finally, let's consider a total harvest of 180,000 pounds.

This corresponds to the equation $1000x + 3000y = 180{,}000.$

Algebra II Applying Systems of Linear Inequalities

$x \le 100$
$y \le 80$
$x + y \le 120$
$20x + 30y \le 3000$
$x \ge 0 \quad y \ge 0$



Objective Function

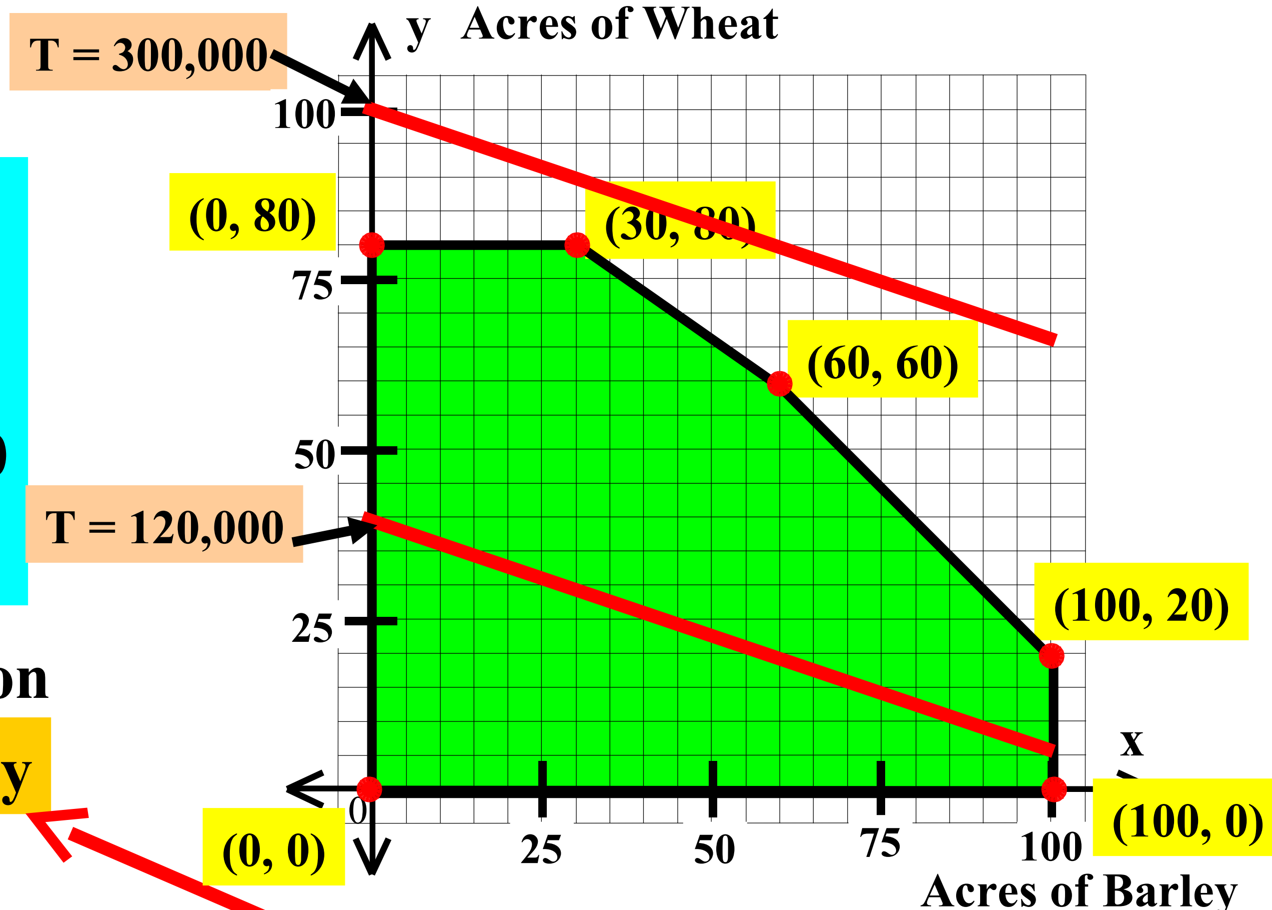
$T = 1000x + 3000y$

Finally, let's consider a total harvest of 180,000 pounds.

This corresponds to the equation $1000x + 3000y = 180{,}000$ or $y = (-1/3)x + 60$.

Algebra II Applying Systems of Linear Inequalities

$x \leq 100$
$y \leq 80$
$x + y \leq 120$
$20x + 30y \leq 3000$
$x \geq 0 \quad y \geq 0$



Objective Function

$T = 1000x + 3000y$

Finally, let's consider a total harvest of 180,000 pounds.

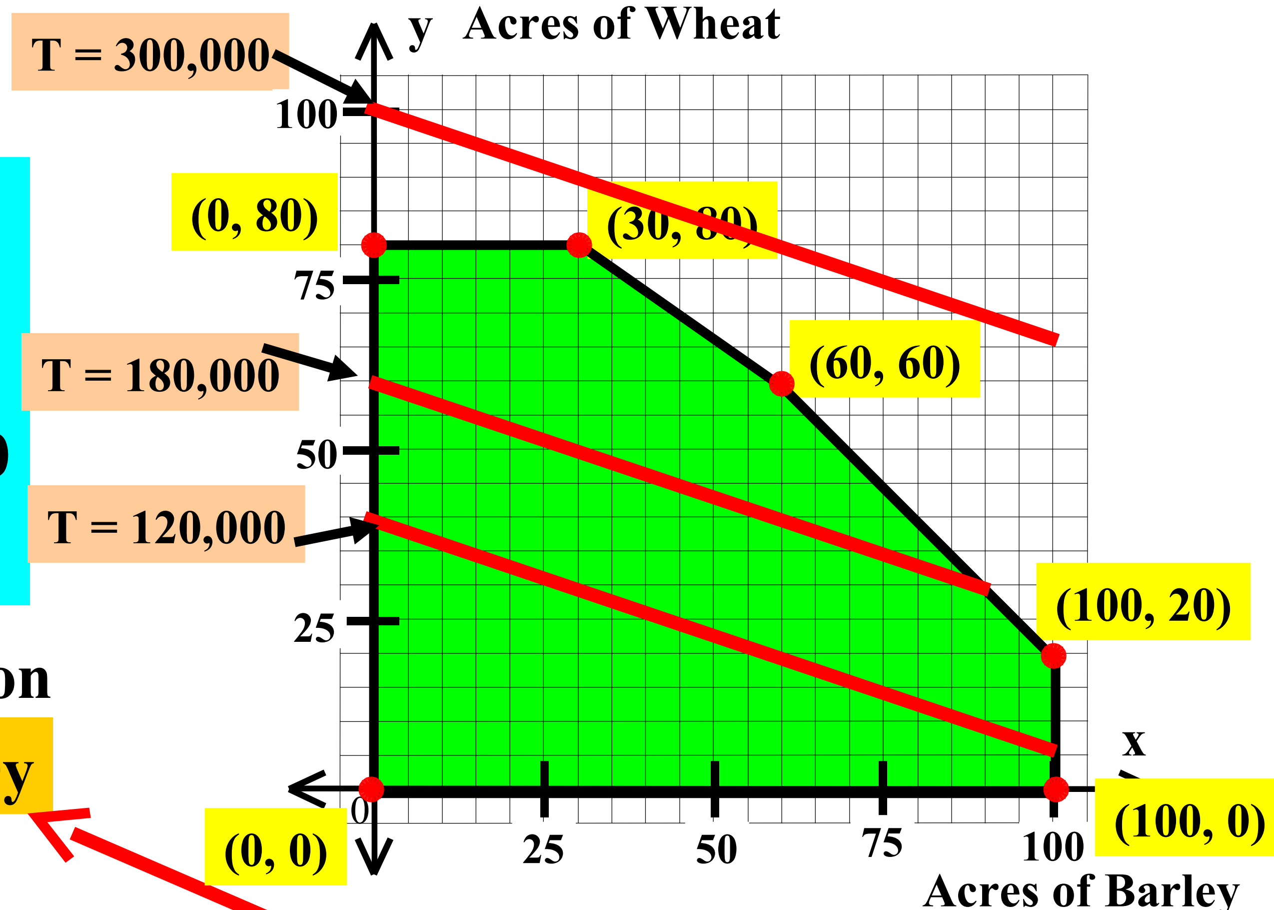
This corresponds to the equation $1000x + 3000y = 180,000$ or $y = (-1/3)x + 60$. Here is the graph of this equation.

Algebra II Applying Systems of Linear Inequalities

$x \le 100$
$y \le 80$
$x + y \le 120$
$20x + 30y \le 3000$
$x \ge 0 \quad y \ge 0$

Objective Function

$T = 1000x + 3000y$



Finally, let's consider a total harvest of 180,000 pounds.

This corresponds to the equation $1000x + 3000y = 180,000$ or $y = (-1/3)x + 60$. Here is the graph of this equation.

Algebra II Applying Systems of Linear Inequalities

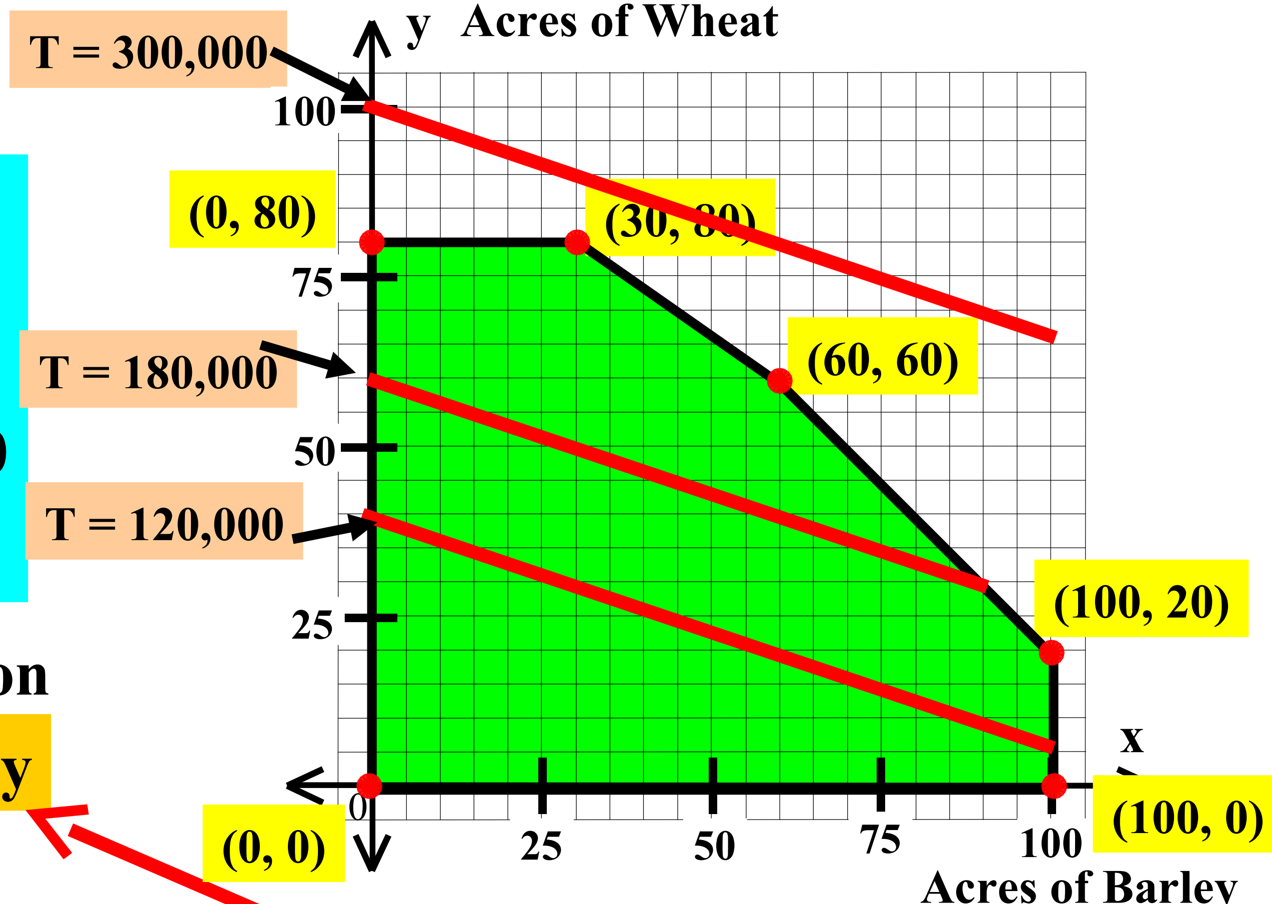
$x \leq 100$

$y \leq 80$

$x + y \leq 120$

$20x + 30y \leq 3000$

$x \geq 0 \quad y \geq 0$



Objective Function

$T = 1000x + 3000y$

Finally, let's consider a total harvest of 180,000 pounds.

This corresponds to the equation $1000x + 3000y = 180{,}000$ or

$y = (-1/3)x + 60.$

Algebra II   Applying Systems of Linear Inequalities

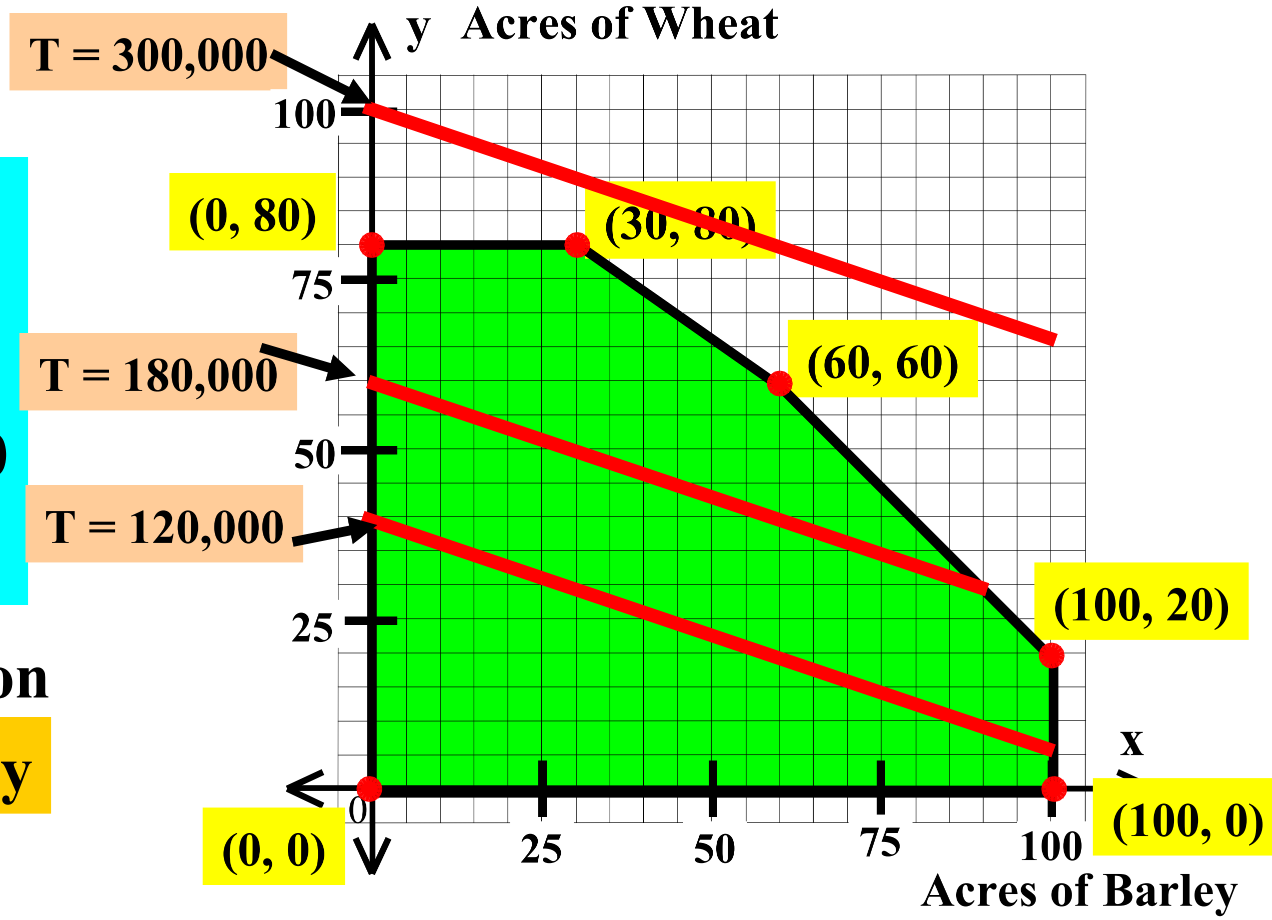
$x \leq 100$

$y \leq 80$

$x + y \leq 120$

$20x + 30y \leq 3000$

$x \geq 0 \quad y \geq 0$



Objective Function

$T = 1000x + 3000y$

What is important here

Algebra II Applying Systems of Linear Inequalities

$x \leq 100$

$y \leq 80$

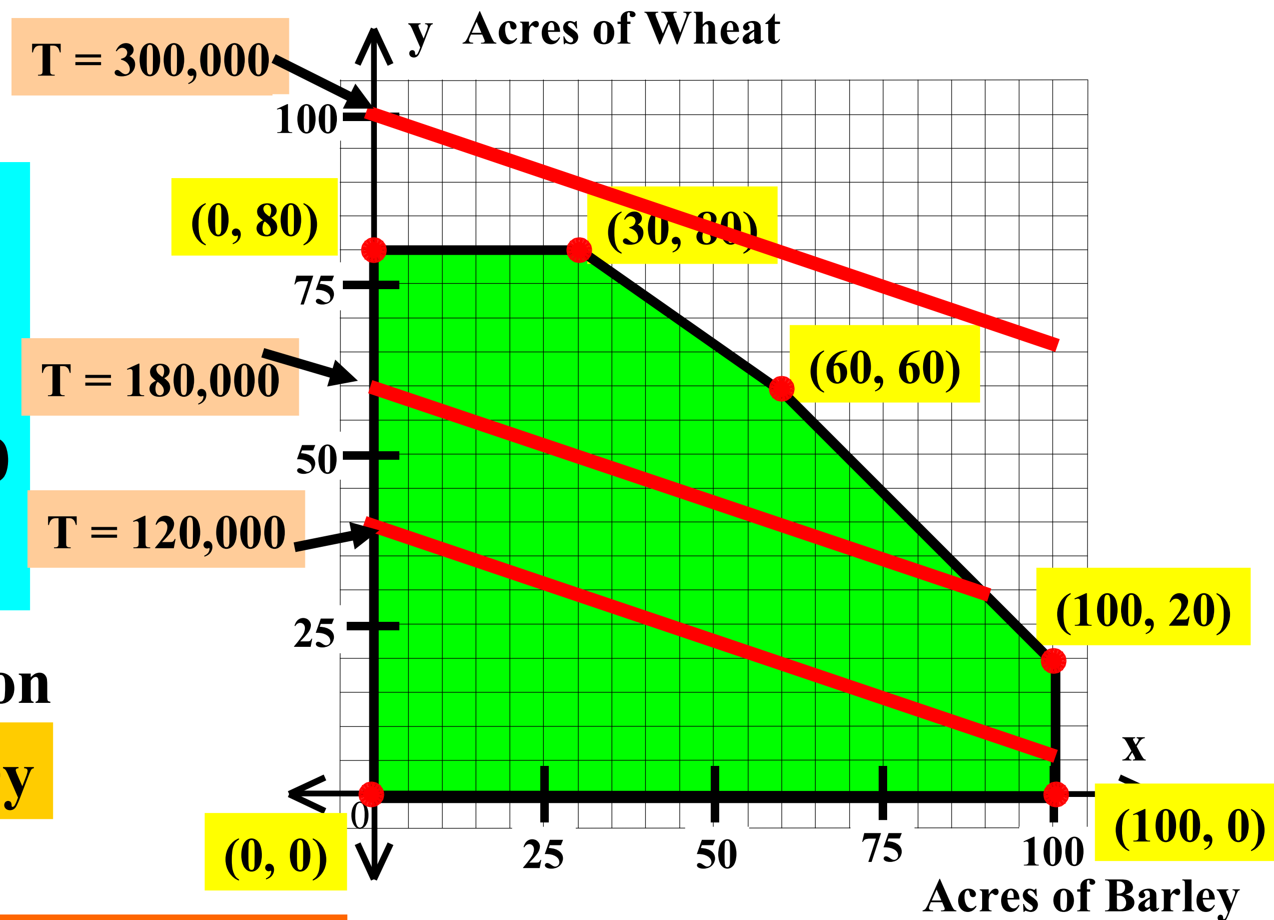
$x + y \leq 120$

$20x + 30y \leq 3000$

$x \geq 0 \quad y \geq 0$

Objective Function

$T = 1000x + 3000y$



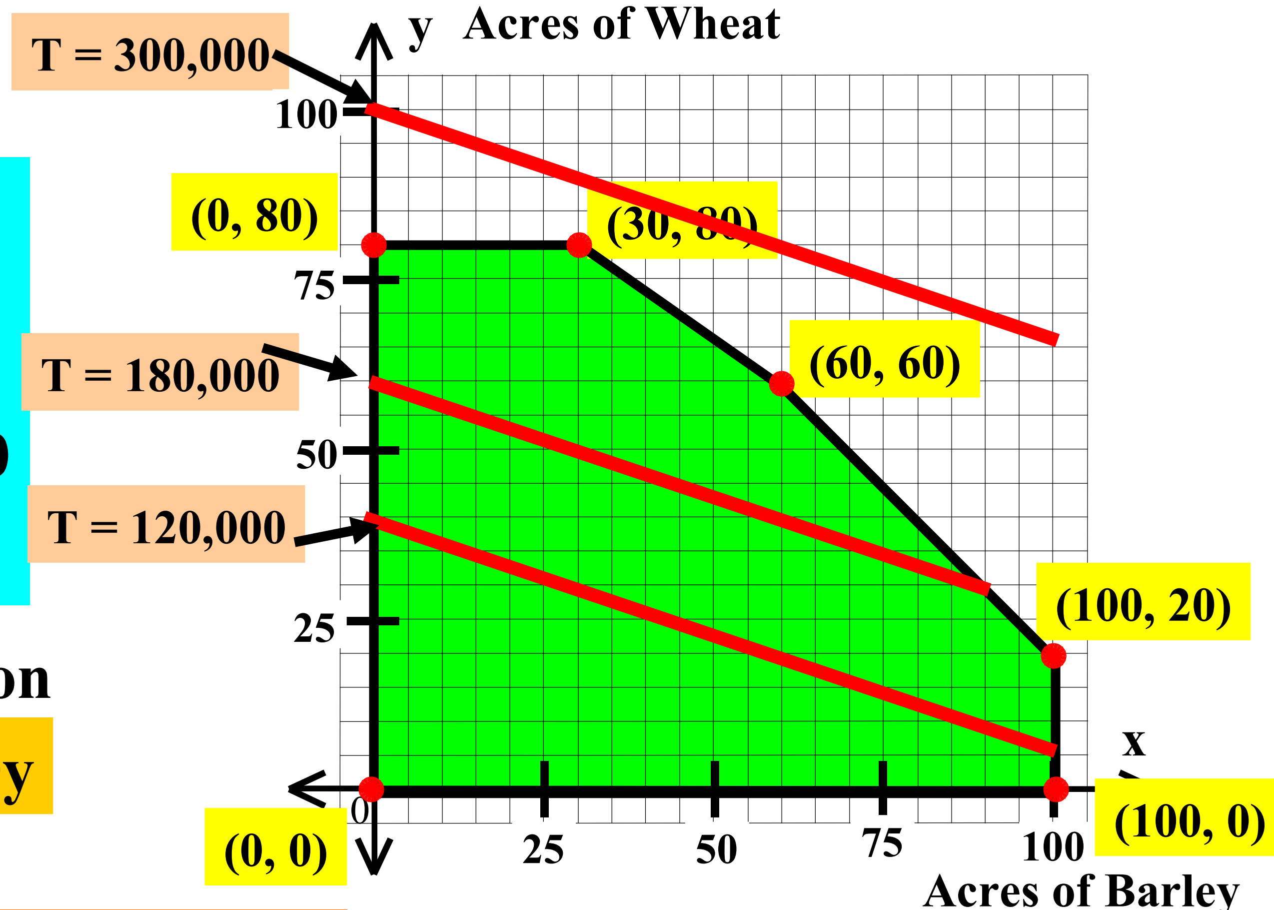
What is **much more important** here

Algebra II   Applying Systems of Linear Inequalities

$x \le 100$
$y \le 80$
$x + y \le 120$
$20x + 30y \le 3000$
$x \ge 0 \quad y \ge 0$

Objective Function

$T = 1000x + 3000y$



What is much more important here is the relationship between the three lines that we have graphed that correspond to the different values of the total harvest.

Algebra II   Applying Systems of Linear Inequalities

$x \leq 100$

$y \leq 80$

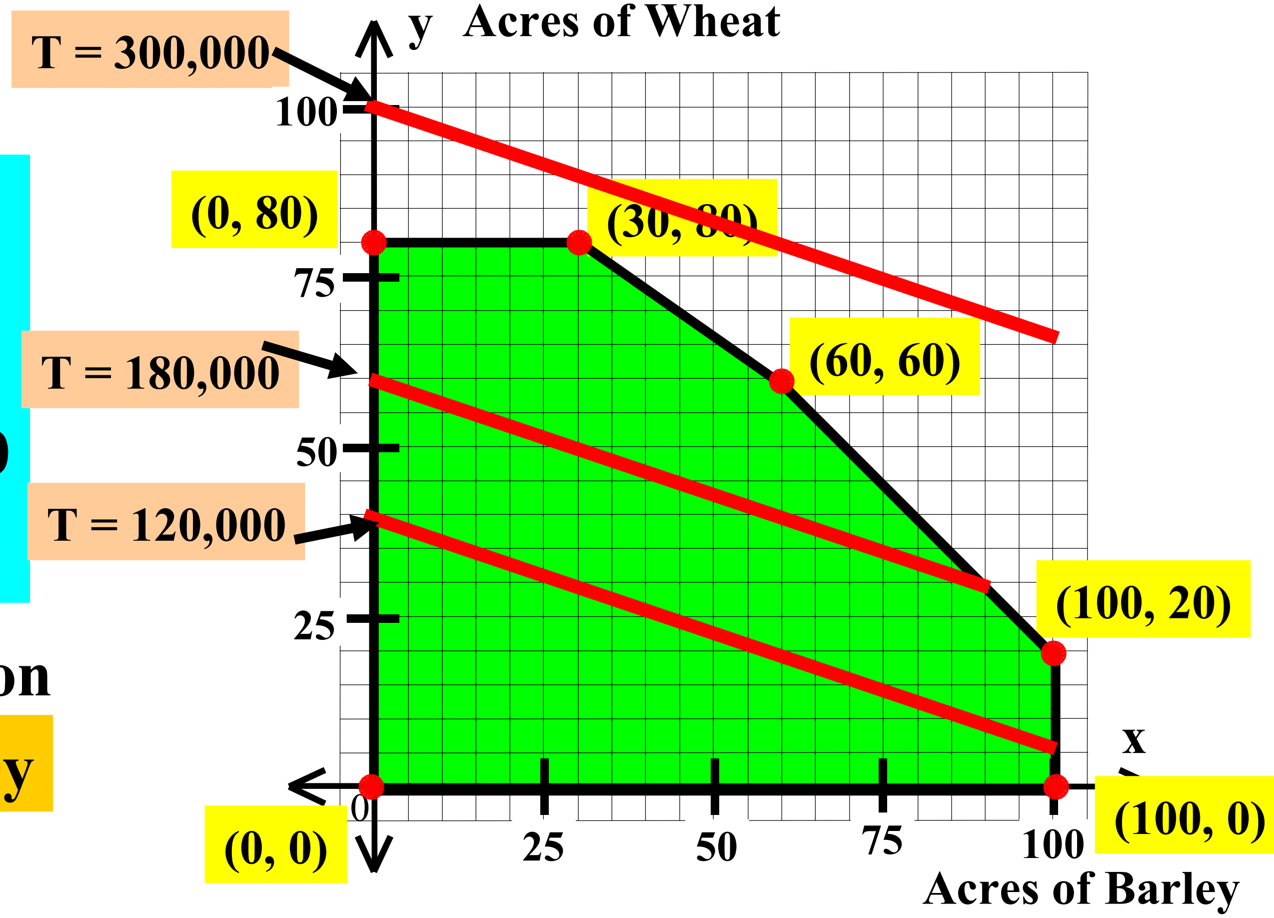
$x + y \leq 120$

$20x + 30y \leq 3000$

$x \geq 0 \qquad y \geq 0$

Objective Function

$T = 1000x + 3000y$



Algebra II Applying Systems of Linear Inequalities

$x \leq 100$

$y \leq 80$

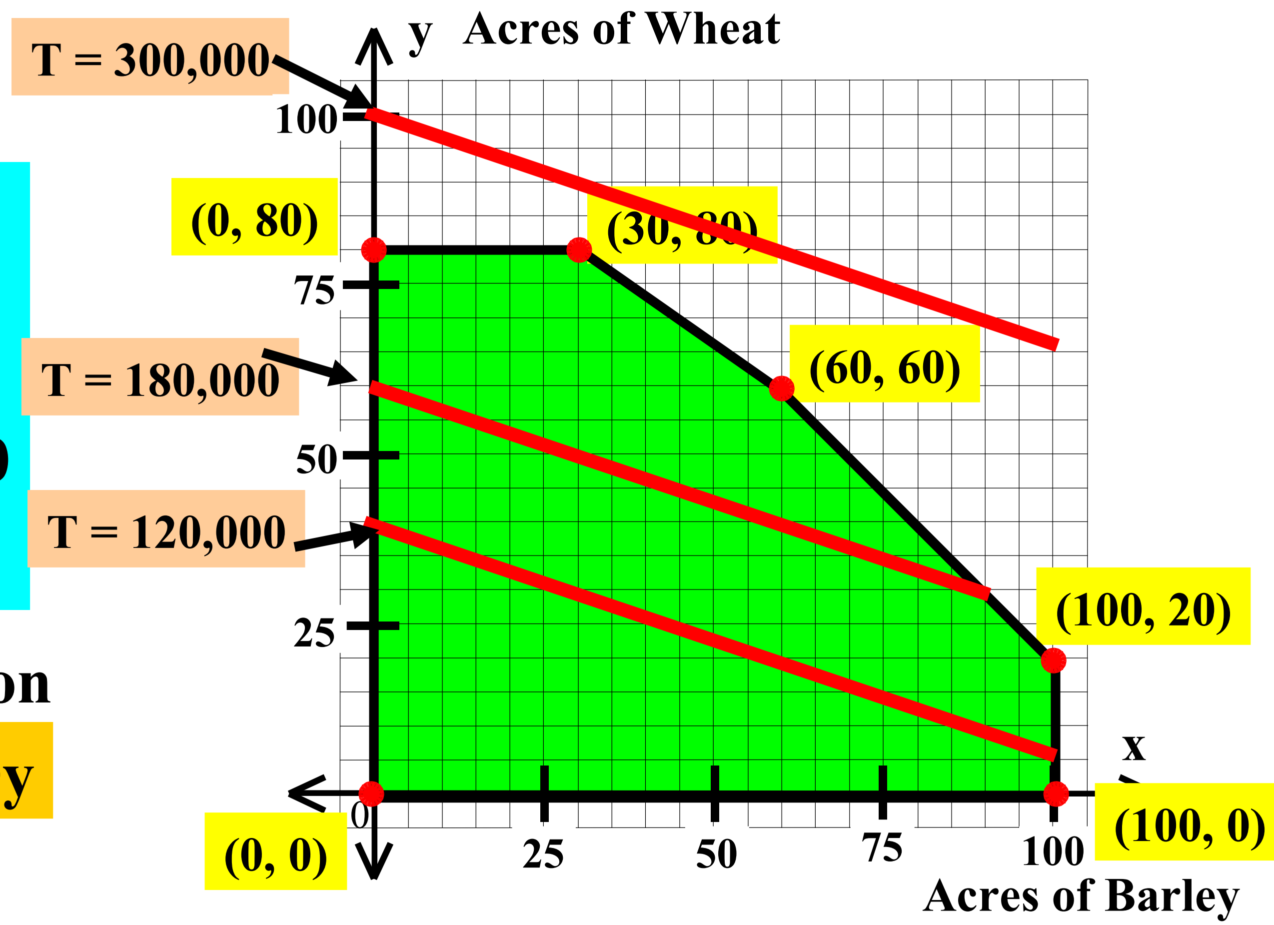
$x + y \leq 120$

$20x + 30y \leq 3000$

$x \geq 0 \quad y \geq 0$

Objective Function

$T = 1000x + 3000y$



They all have the same slope.

Algebra II Applying Systems of Linear Inequalities

$x \le 100$

$y \le 80$

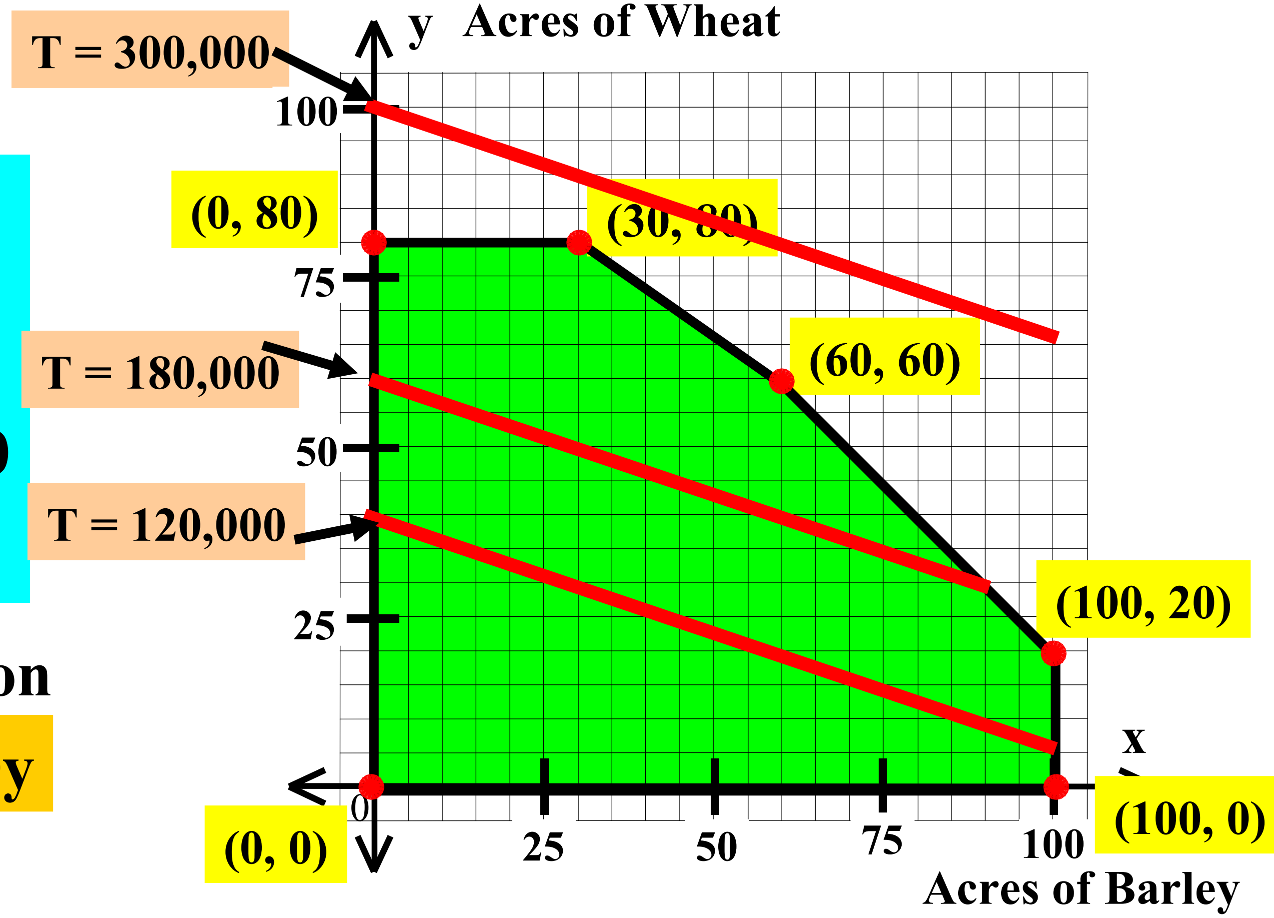
$x + y \le 120$

$20x + 30y \le 3000$

$x \ge 0 \quad y \ge 0$

Objective Function

$T = 1000x + 3000y$



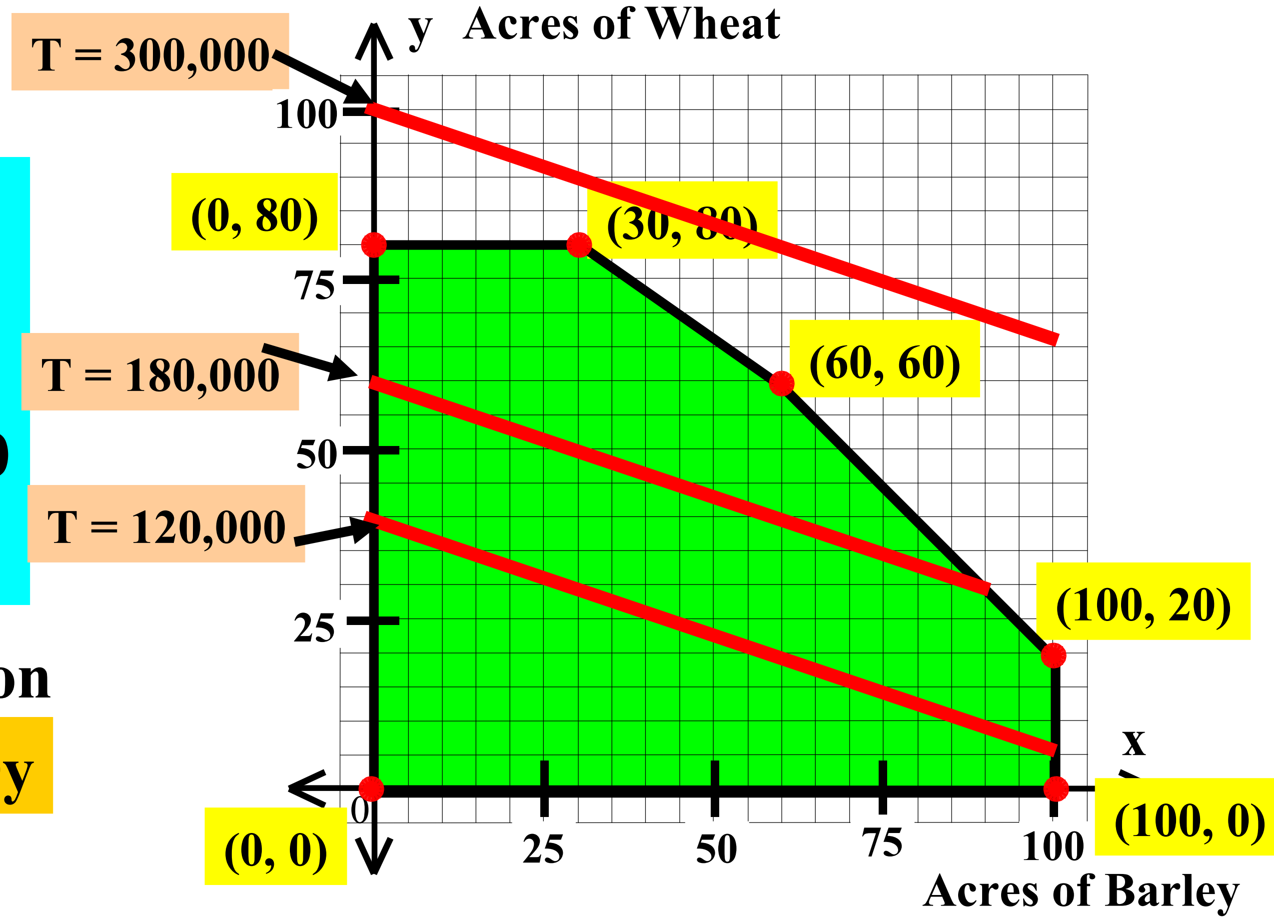
They all have the same slope. The only difference is the y-intercept.

Algebra II   Applying Systems of Linear Inequalities

$x \leq 100$
$y \leq 80$
$x + y \leq 120$
$20x + 30y \leq 3000$
$x \geq 0 \quad y \geq 0$

Objective Function

$T = 1000x + 3000y$



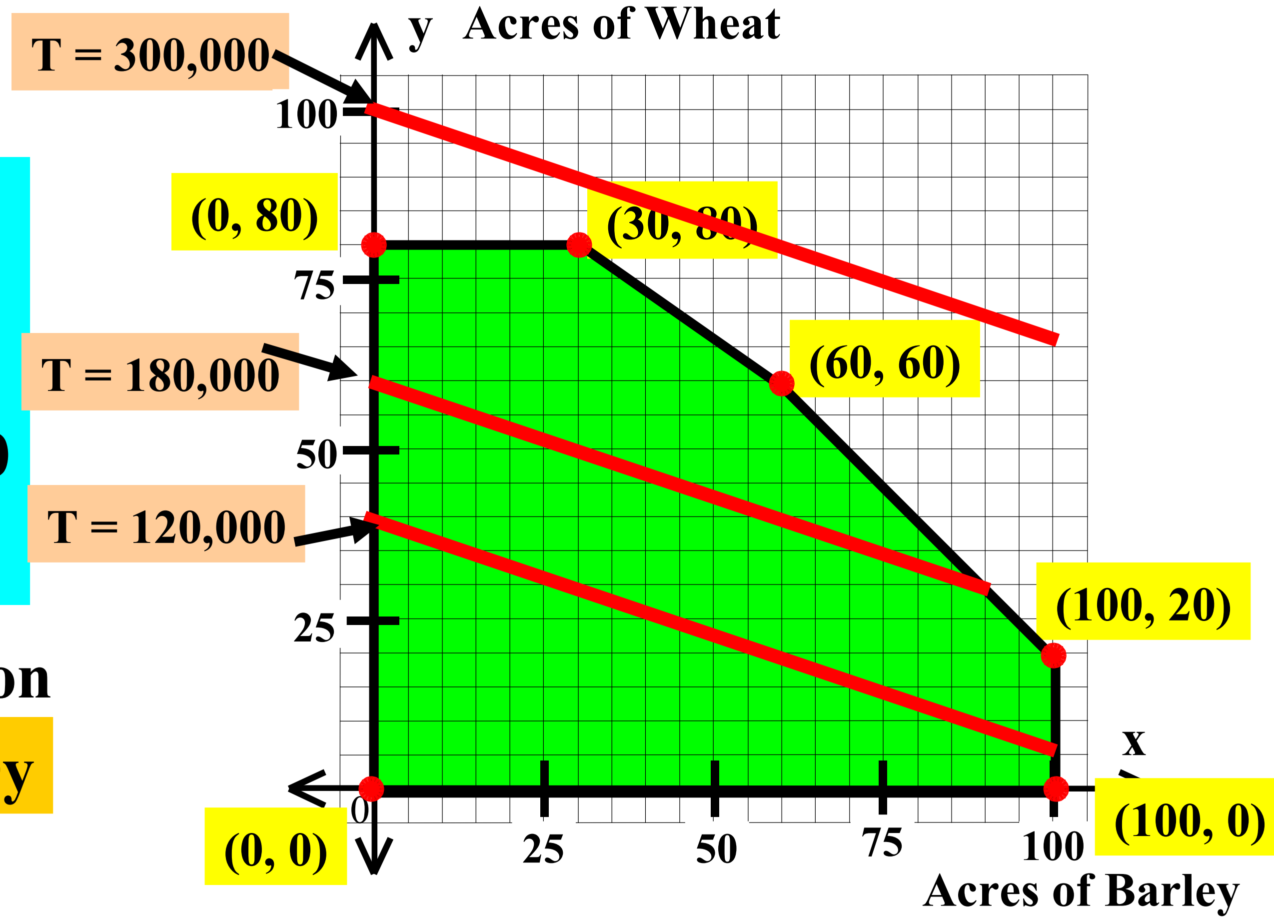
They all have the same slope. The only difference is the y-intercept. As the 'potential' total harvest increases,

Algebra II   Applying Systems of Linear Inequalities

$x \le 100$
$y \le 80$
$x + y \le 120$
$20x + 30y \le 3000$
$x \ge 0 \quad y \ge 0$

Objective Function

$T = 1000x + 3000y$



They all have the same slope. The only difference is the y-intercept. As the 'potential' total harvest increases, the y-intercept increases as well.

Algebra II Applying Systems of Linear Inequalities

$x \le 100$

$y \le 80$

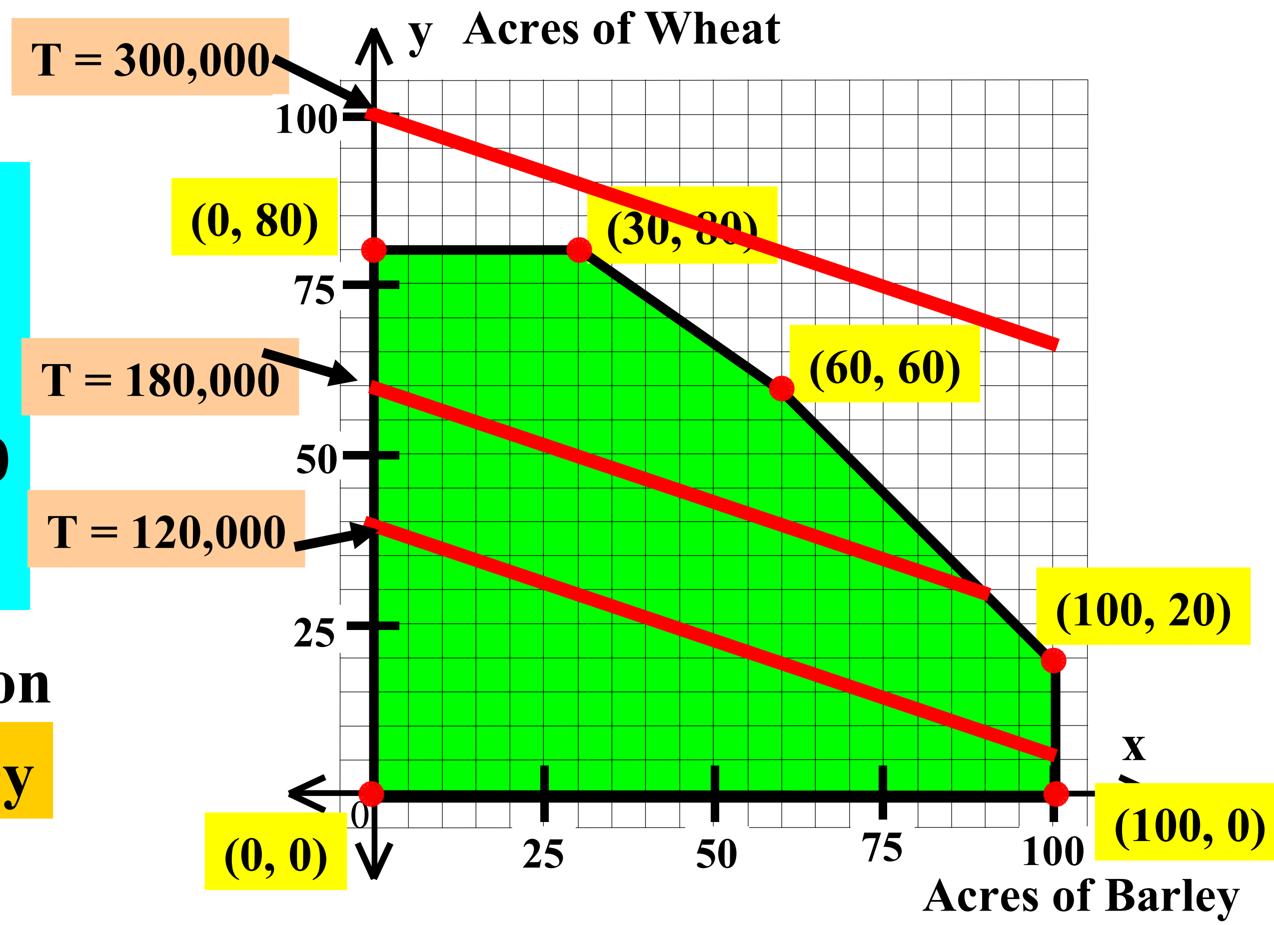
$x + y \le 120$

$20x + 30y \le 3000$

$x \ge 0 \quad y \ge 0$

Objective Function

$T = 1000x + 3000y$

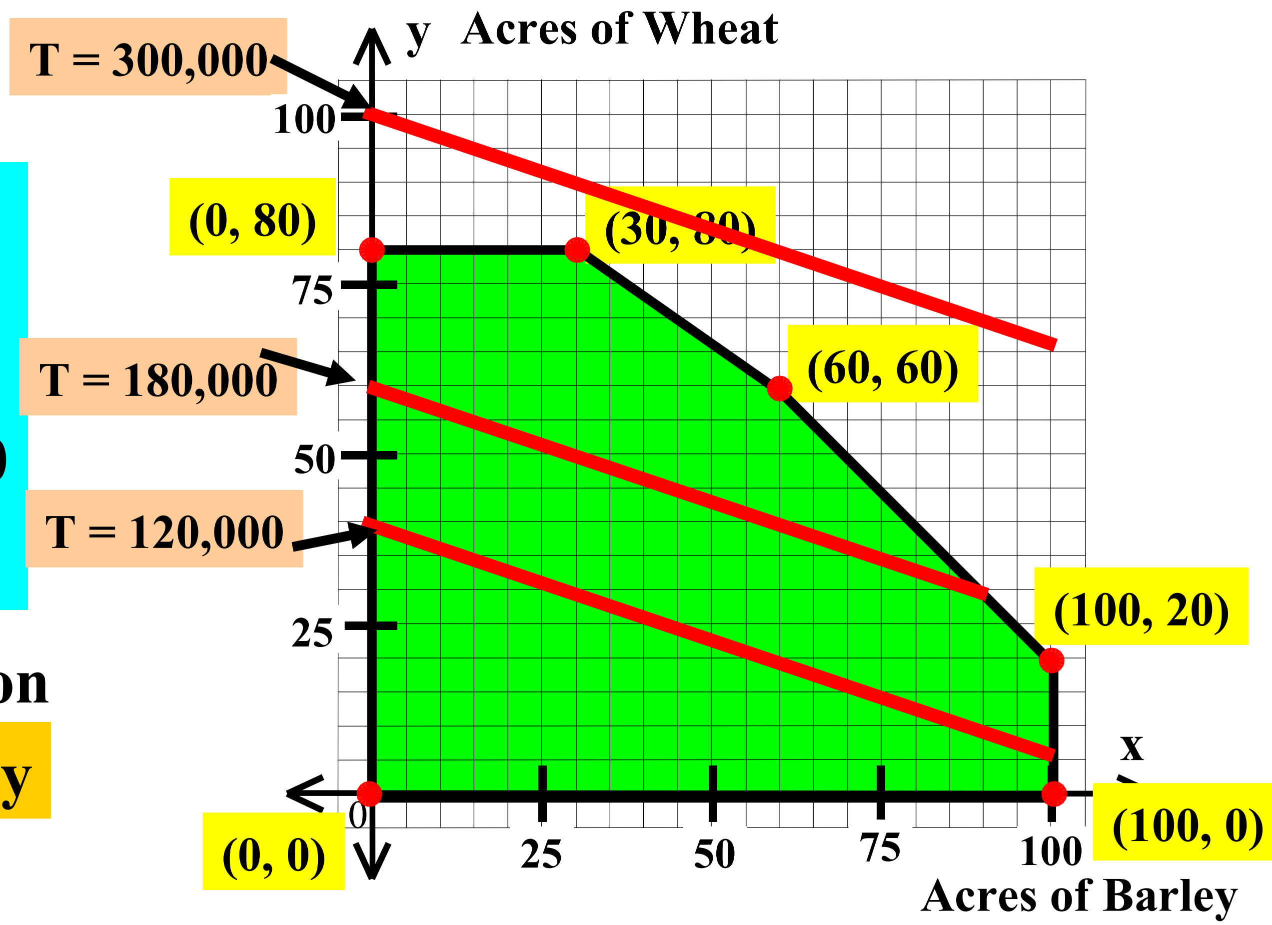


Algebra II Applying Systems of Linear Inequalities

$x \leq 100$
$y \leq 80$
$x + y \leq 120$
$20x + 30y \leq 3000$
$x \geq 0 \quad y \geq 0$

Objective Function

$T = 1000x + 3000y$



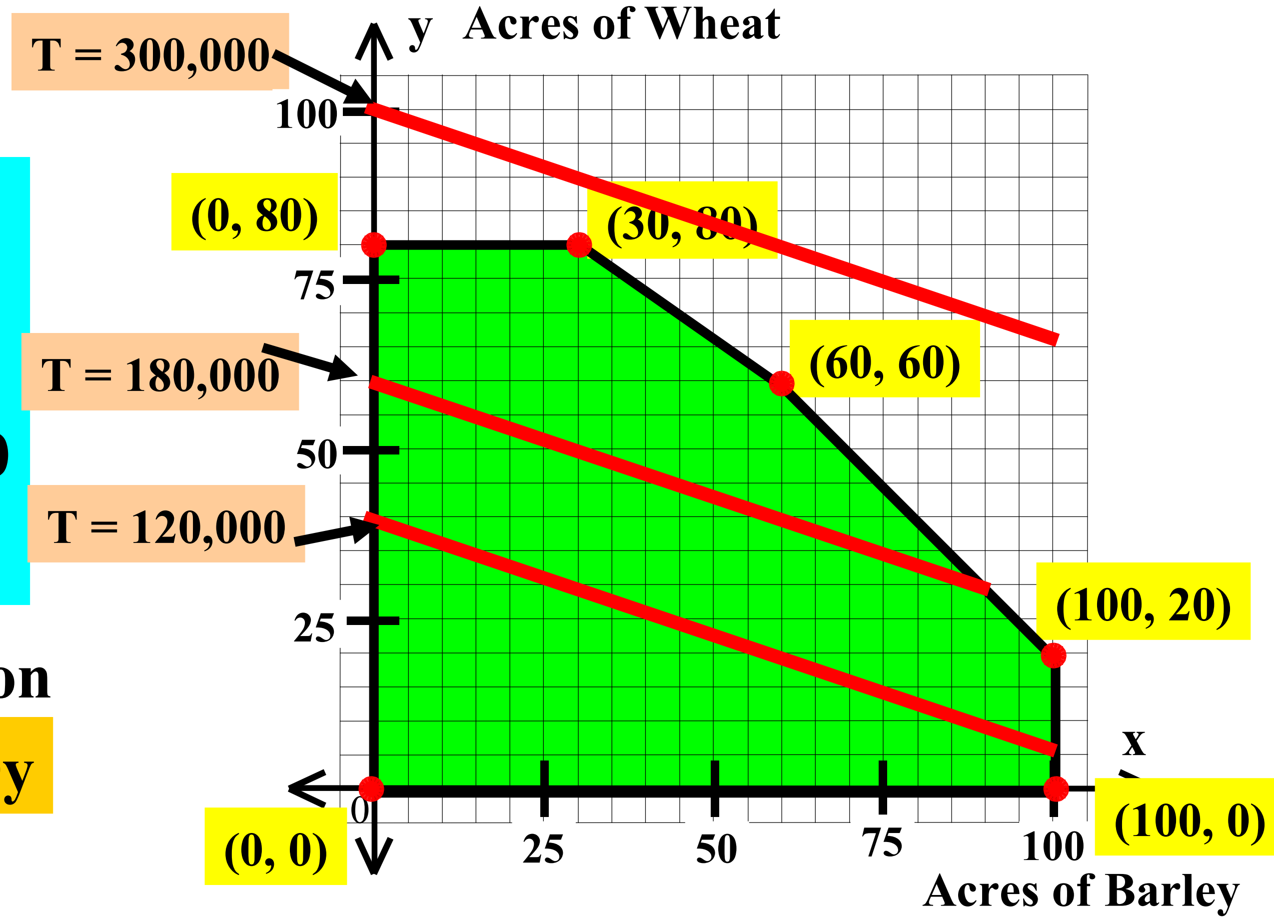
Looking at this graph,

Algebra II   Applying Systems of Linear Inequalities

$x \le 100$
$y \le 80$
$x + y \le 120$
$20x + 30y \le 3000$
$x \ge 0 \quad y \ge 0$

Objective Function

$T = 1000x + 3000y$



Looking at this graph, you may be able to determine where the line corresponding to the maximum total harvest would intersect the graph

Algebra II Applying Systems of Linear Inequalities

$x \leq 100$

$y \leq 80$

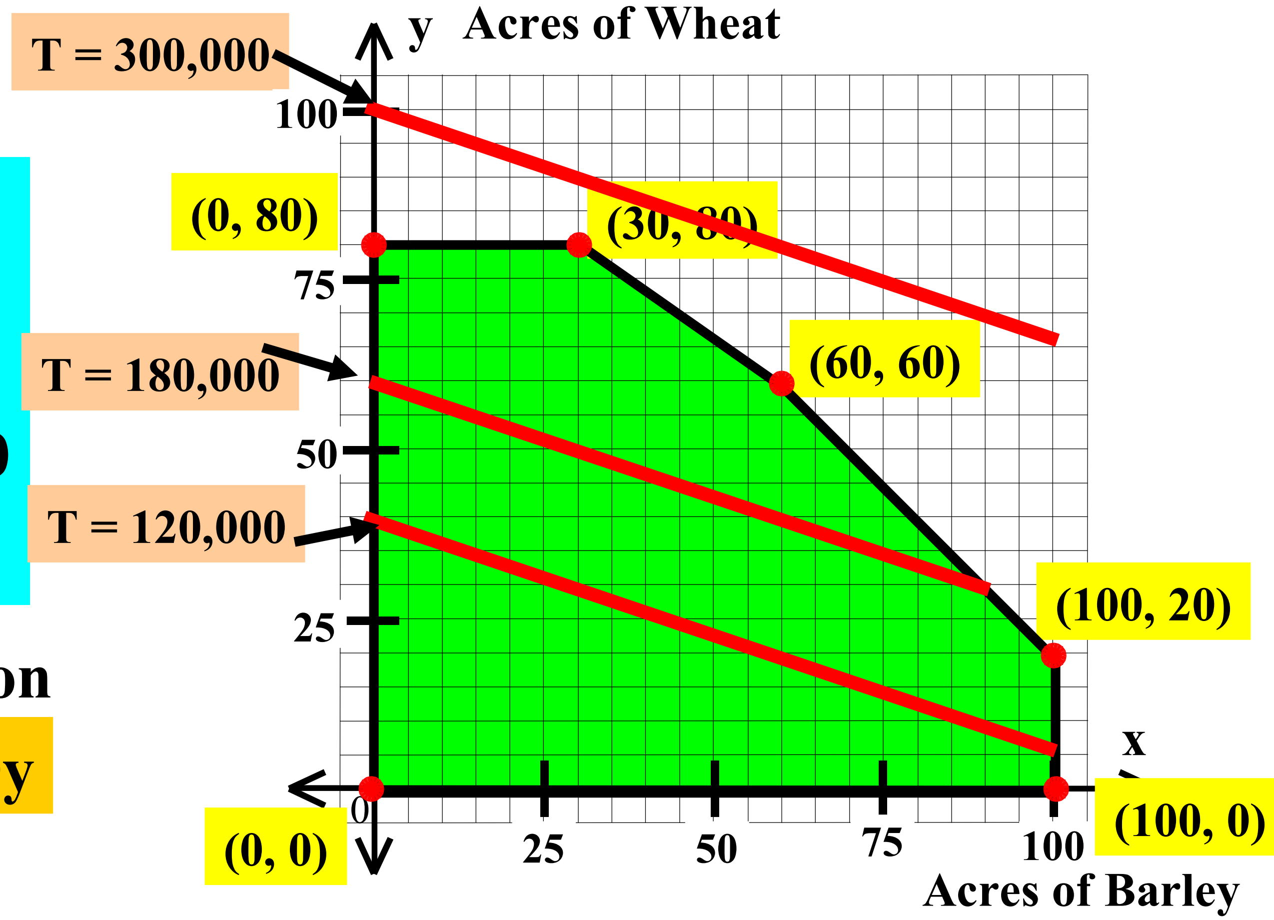
$x + y \leq 120$

$20x + 30y \leq 3000$

$x \geq 0 \qquad y \geq 0$

Objective Function

$T = 1000x + 3000y$



Looking at this graph, you may be able to determine where the line corresponding to the maximum total harvest would intersect the graph ----

Algebra II Applying Systems of Linear Inequalities

$x \le 100$

$y \le 80$

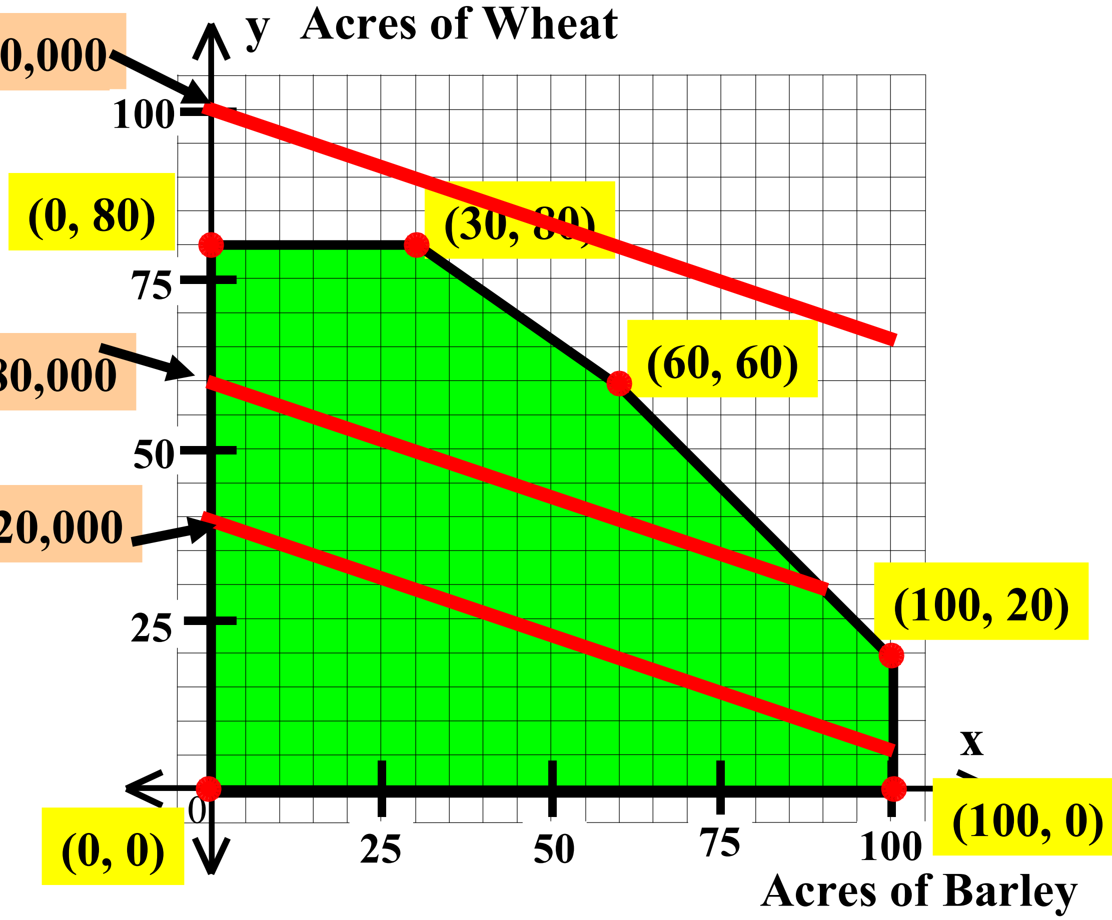
$x + y \le 120$

$20x + 30y \le 3000$

$x \ge 0 \quad y \ge 0$

Objective Function

$T = 1000x + 3000y$



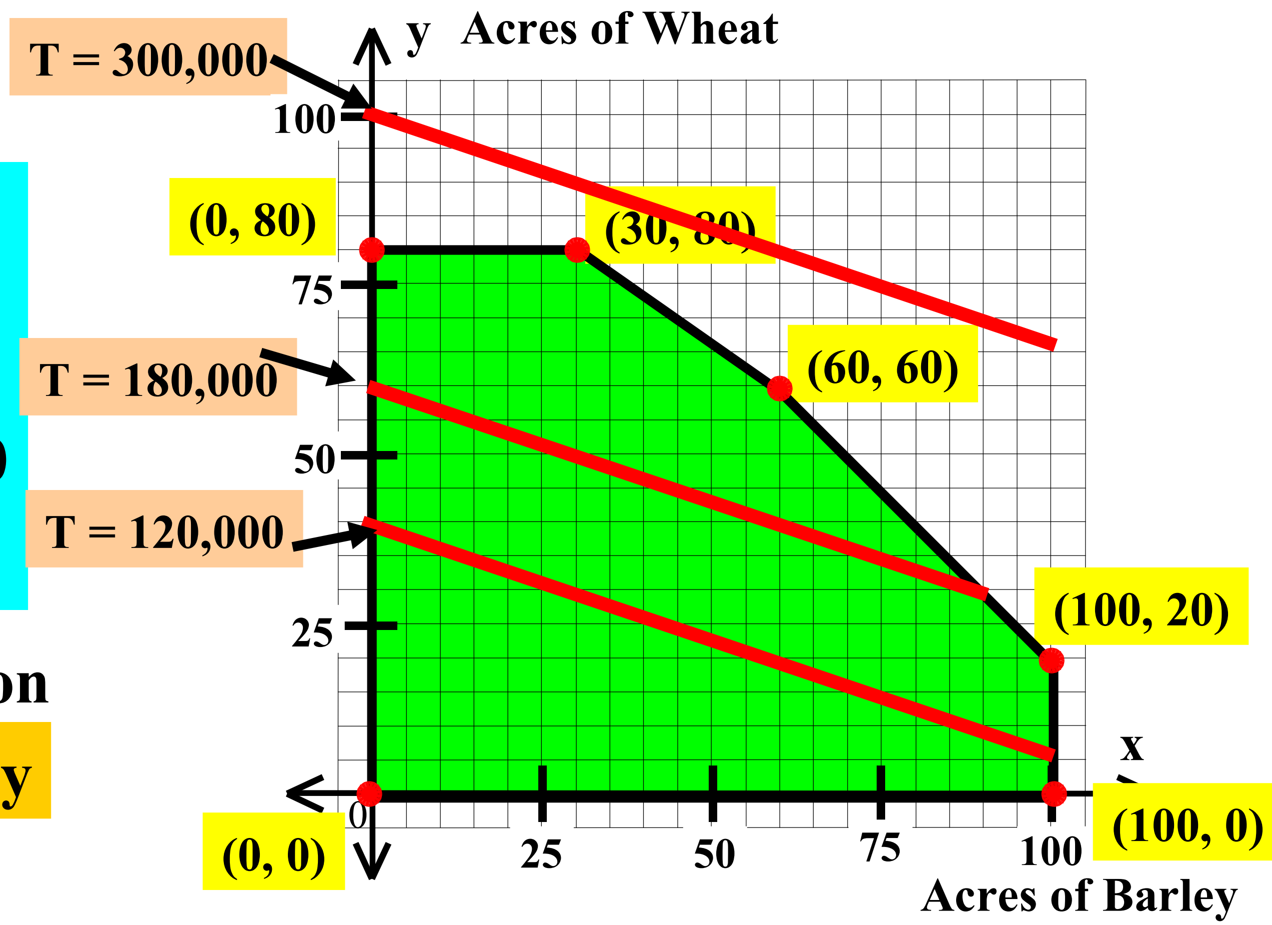
Looking at this graph, you may be able to determine where the line corresponding to the maximum total harvest would intersect the graph ---- at the vertex (30,80).

Algebra II Applying Systems of Linear Inequalities

$x \le 100$
$y \le 80$
$x + y \le 120$
$20x + 30y \le 3000$
$x \ge 0 \quad y \ge 0$

Objective Function

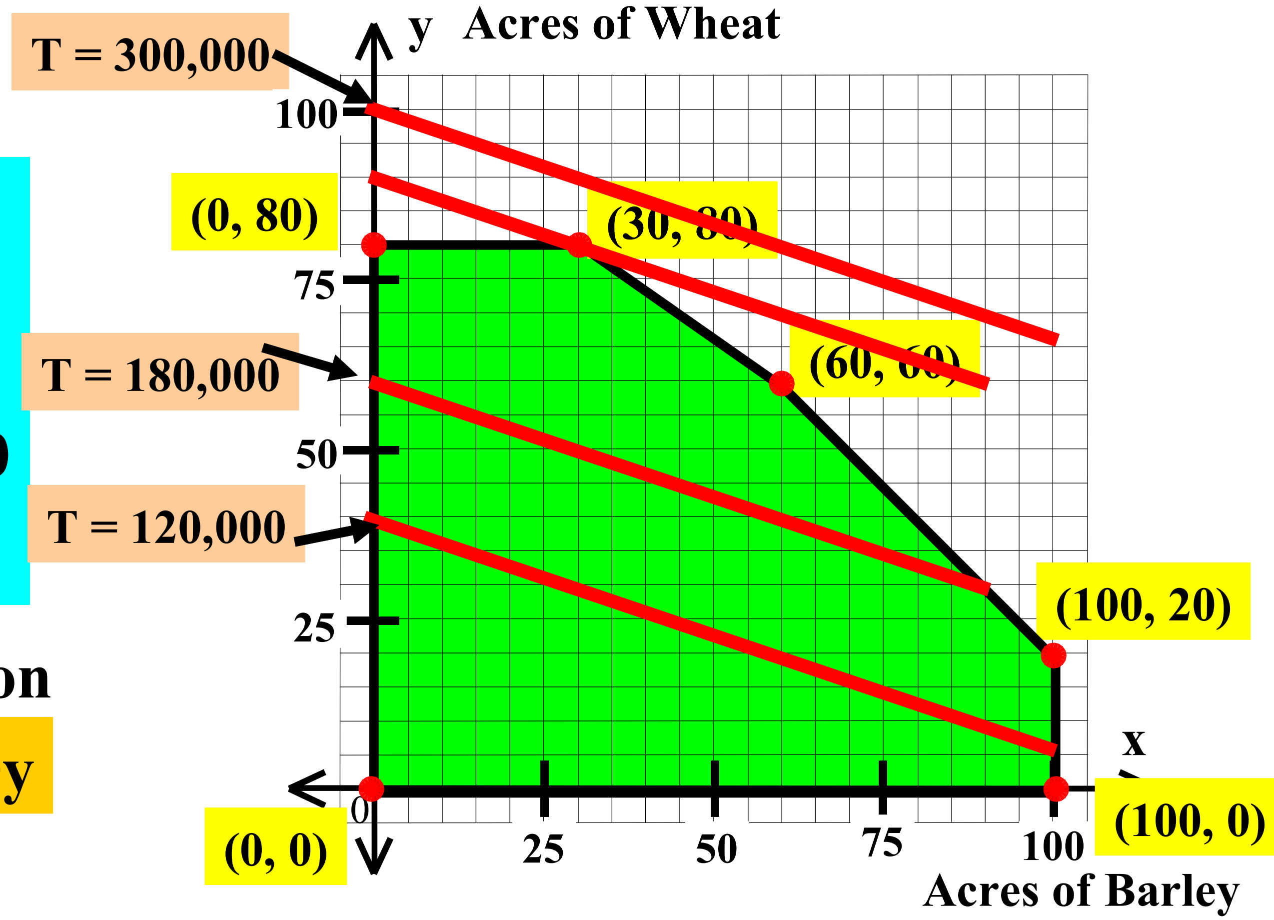
$T = 1000x + 3000y$



Looking at this graph, you may be able to determine where the line corresponding to the maximum total harvest would intersect the graph --- at the vertex (30,80). Here is that line.

Algebra II   Applying Systems of Linear Inequalities

$$x \le 100$$
$$y \le 80$$
$$x + y \le 120$$
$$20x + 30y \le 3000$$
$$x \ge 0 \qquad y \ge 0$$



Objective Function

$$T = 1000x + 3000y$$

Looking at this graph, you may be able to determine where the line corresponding to the maximum total harvest would intersect the graph at the vertex (30,80). Here is that line.

Algebra II   Applying Systems of Linear Inequalities

$x \le 100$

$y \le 80$

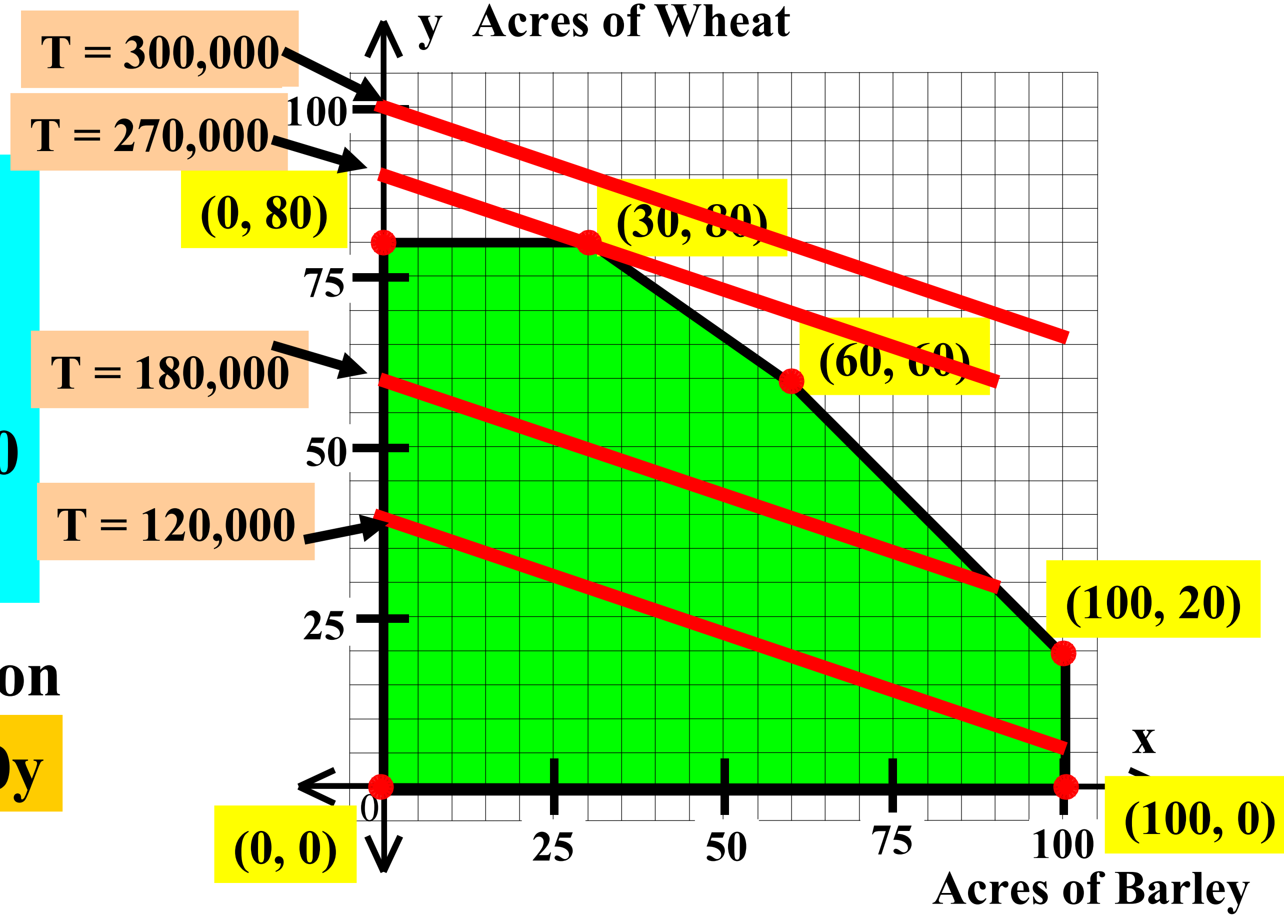
$x + y \le 120$

$20x + 30y \le 3000$

$x \ge 0 \quad y \ge 0$

Objective Function

$T = 1000x + 3000y$



Looking at this graph, you may be able to determine where the line corresponding to the maximum total harvest would intersect the graph at the vertex (30,80). Here is that line.

Algebra II Applying Systems of Linear Inequalities

$x \leq 100$

$y \leq 80$

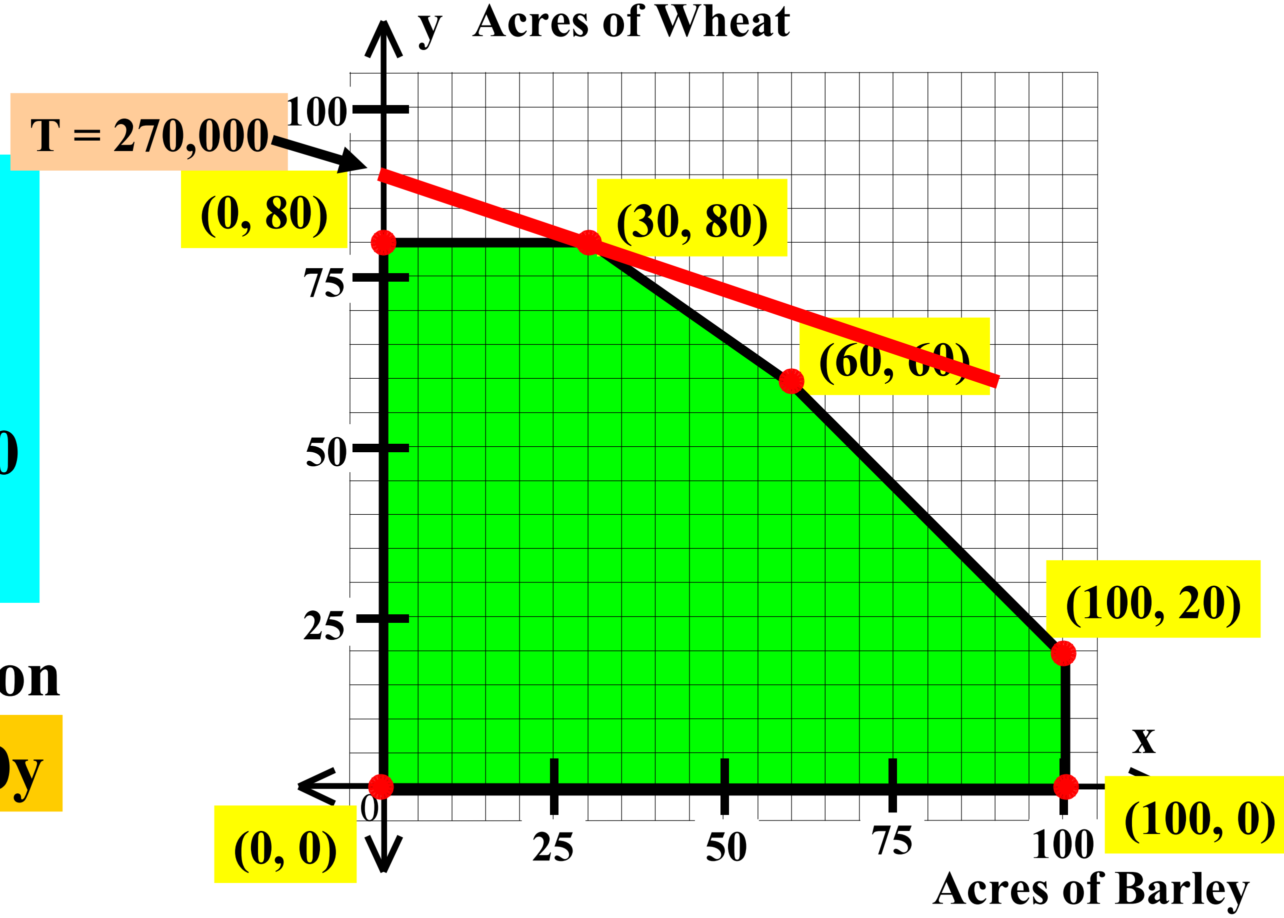
$x + y \leq 120$

$20x + 30y \leq 3000$

$x \geq 0 \quad y \geq 0$

Objective Function

$T = 1000x + 3000y$



Looking at this graph, you may be able to determine where the line corresponding to the maximum total harvest would intersect the graph at the vertex (30,80). Here is that line.

Algebra II   Applying Systems of Linear Inequalities

$x \leq 100$

$y \leq 80$

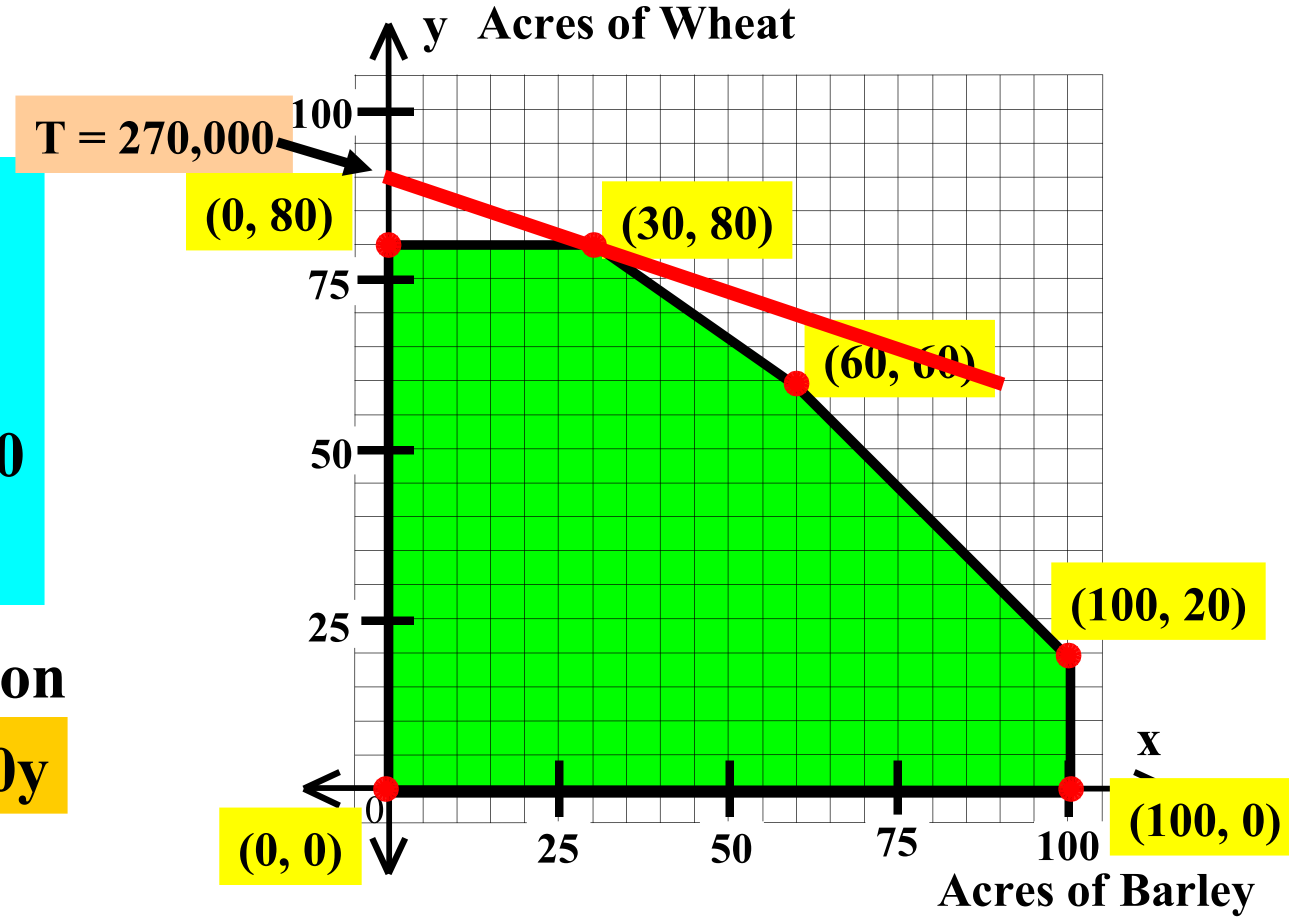
$x + y \leq 120$

$20x + 30y \leq 3000$

$x \geq 0 \qquad y \geq 0$

Objective Function

$T = 1000x + 3000y$



Algebra II Applying Systems of Linear Inequalities

$x \le 100$

$y \le 80$

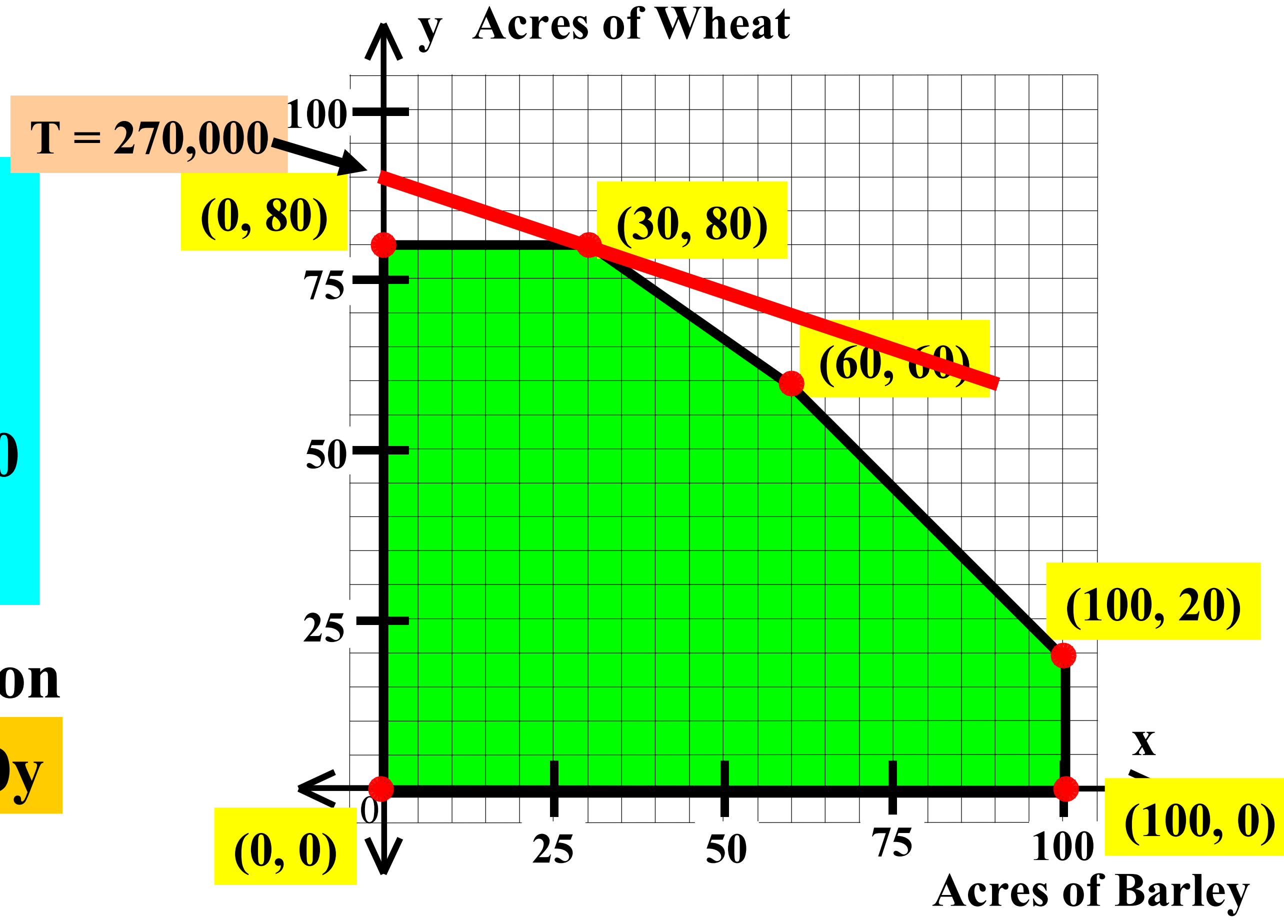
$x + y \le 120$

$20x + 30y \le 3000$

$x \ge 0 \quad y \ge 0$

Objective Function

$T = 1000x + 3000y$



So, the maximum total harvest they can achieve is 270,000 pounds.

Algebra II   Applying Systems of Linear Inequalities

$x \le 100$

$y \le 80$

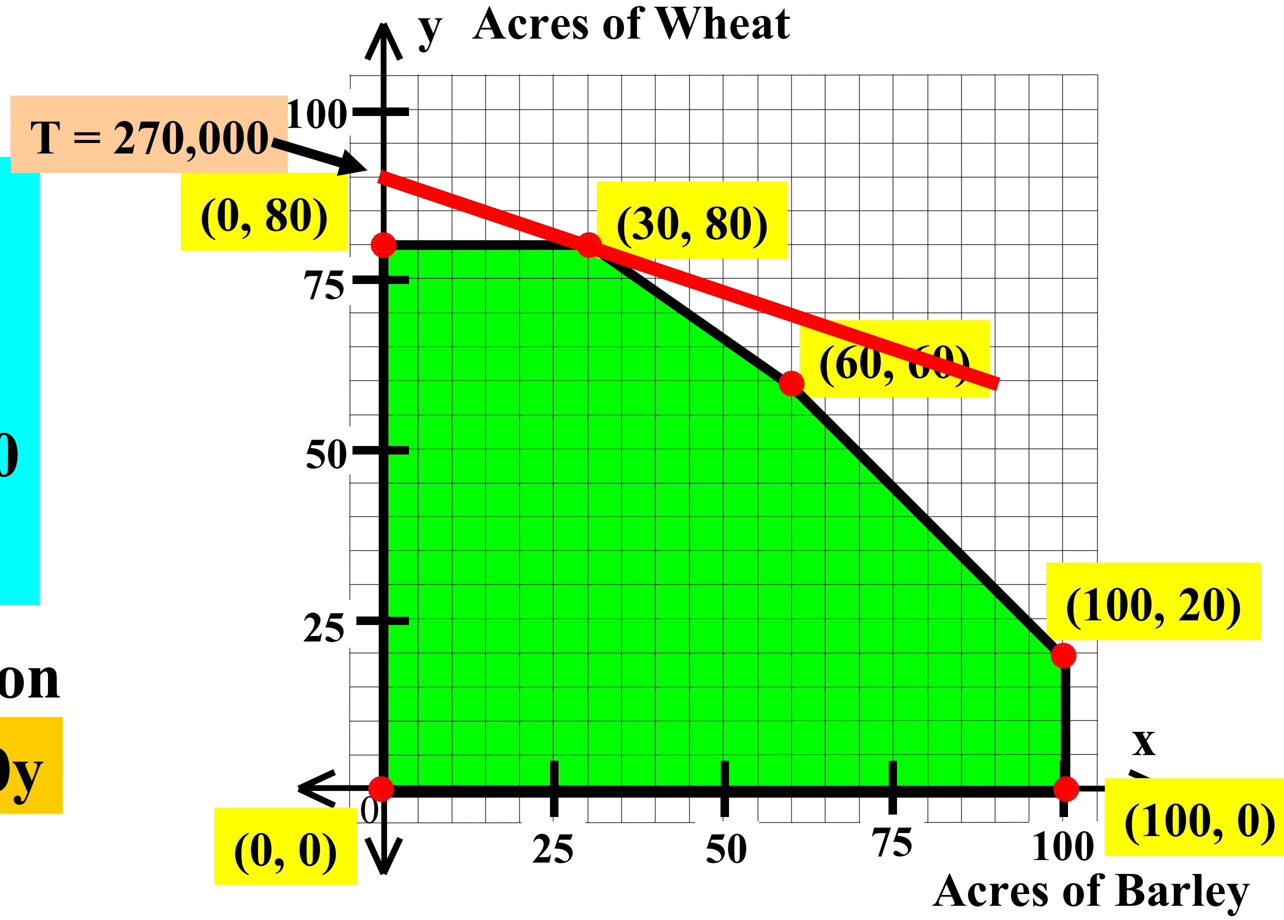
$x + y \le 120$

$20x + 30y \le 3000$

$x \ge 0 \quad y \ge 0$

Objective Function

$T = 1000x + 3000y$



So, the maximum total harvest they can achieve is 270,000 pounds. They should plant 30 acres of Barley and 80 acres of wheat.

Algebra II Applying Systems of Linear Inequalities

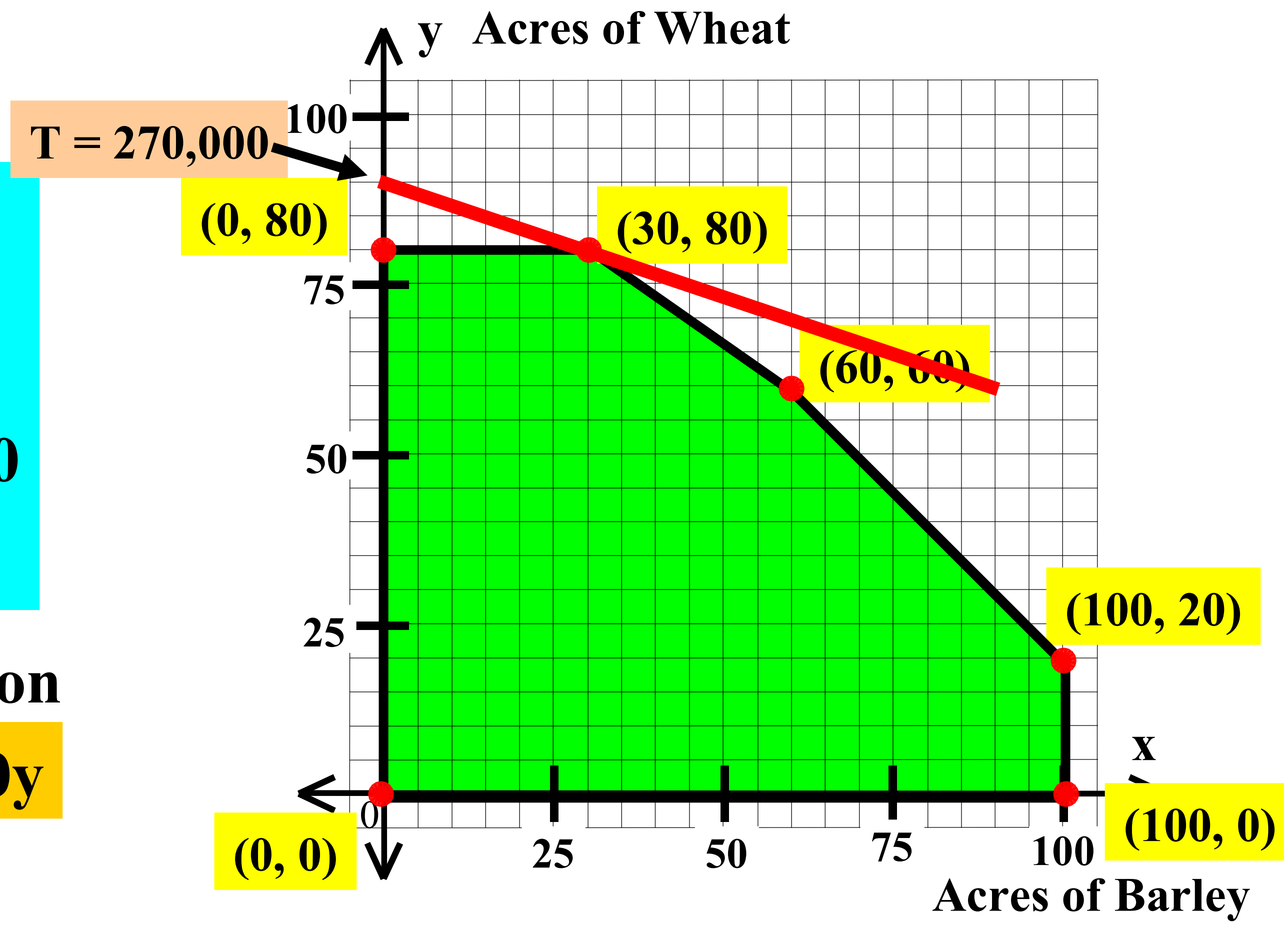
$x \leq 100$

$y \leq 80$

$x + y \leq 120$

$20x + 30y \leq 3000$

$x \geq 0 \qquad y \geq 0$



Objective Function

$T = 1000x + 3000y$

So, the maximum total harvest they can achieve is 270,000 pounds. They should plant 30 acres of Barley and 80 acres of wheat. That's not really the end of the story.

Algebra II   Applying Systems of Linear Inequalities

$x \leq 100$

$y \leq 80$

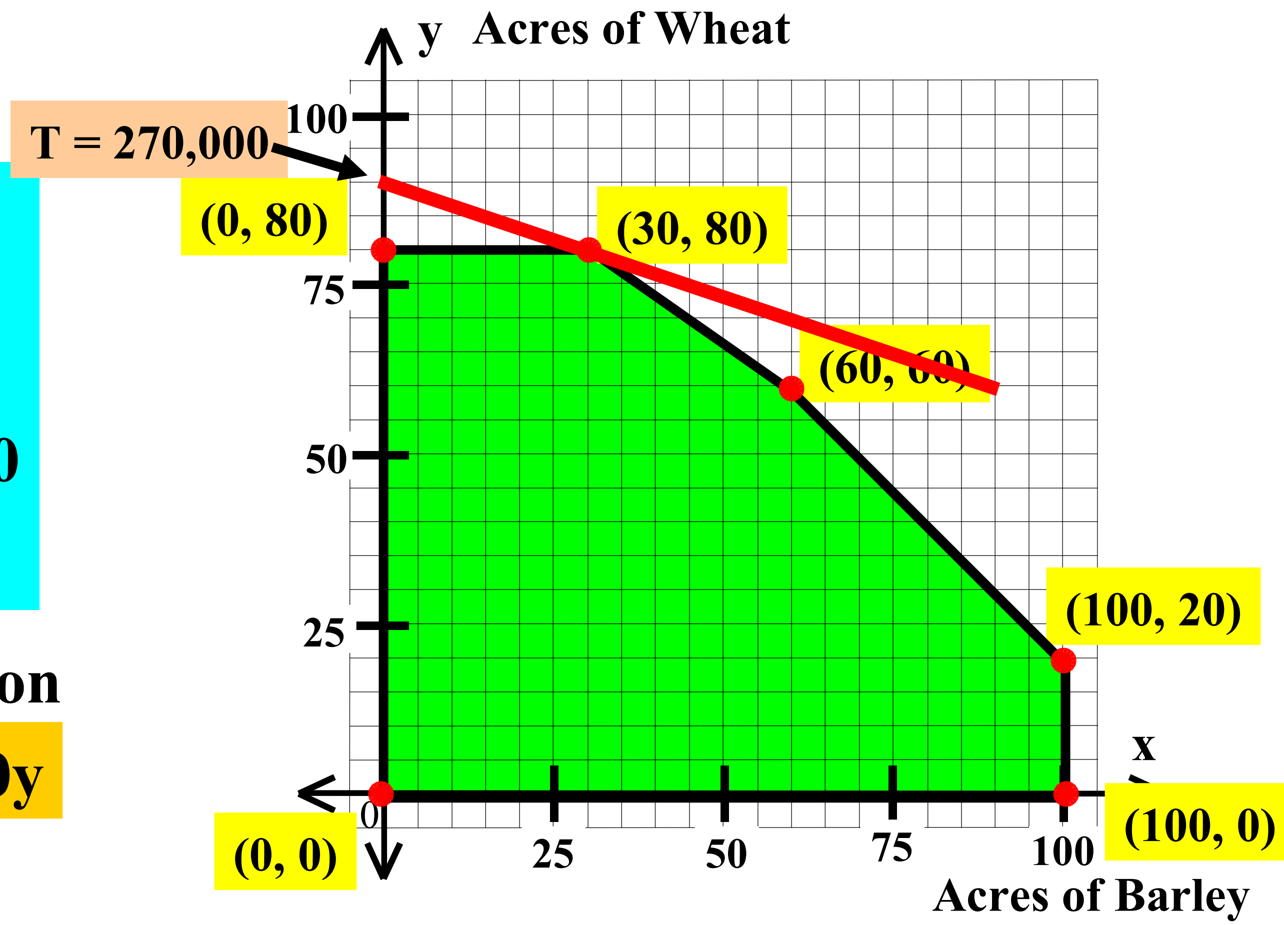
$x + y \leq 120$

$20x + 30y \leq 3000$

$x \geq 0 \quad y \geq 0$

Objective Function

$T = 1000x + 3000y$



So, the maximum total harvest they can achieve is 270,000 pounds. They should plant 30 acres of Barley and 80 acres of wheat. That's not really the end of the story. What have we observed when solving this problem?

Algebra II Applying Systems of Linear Inequalities

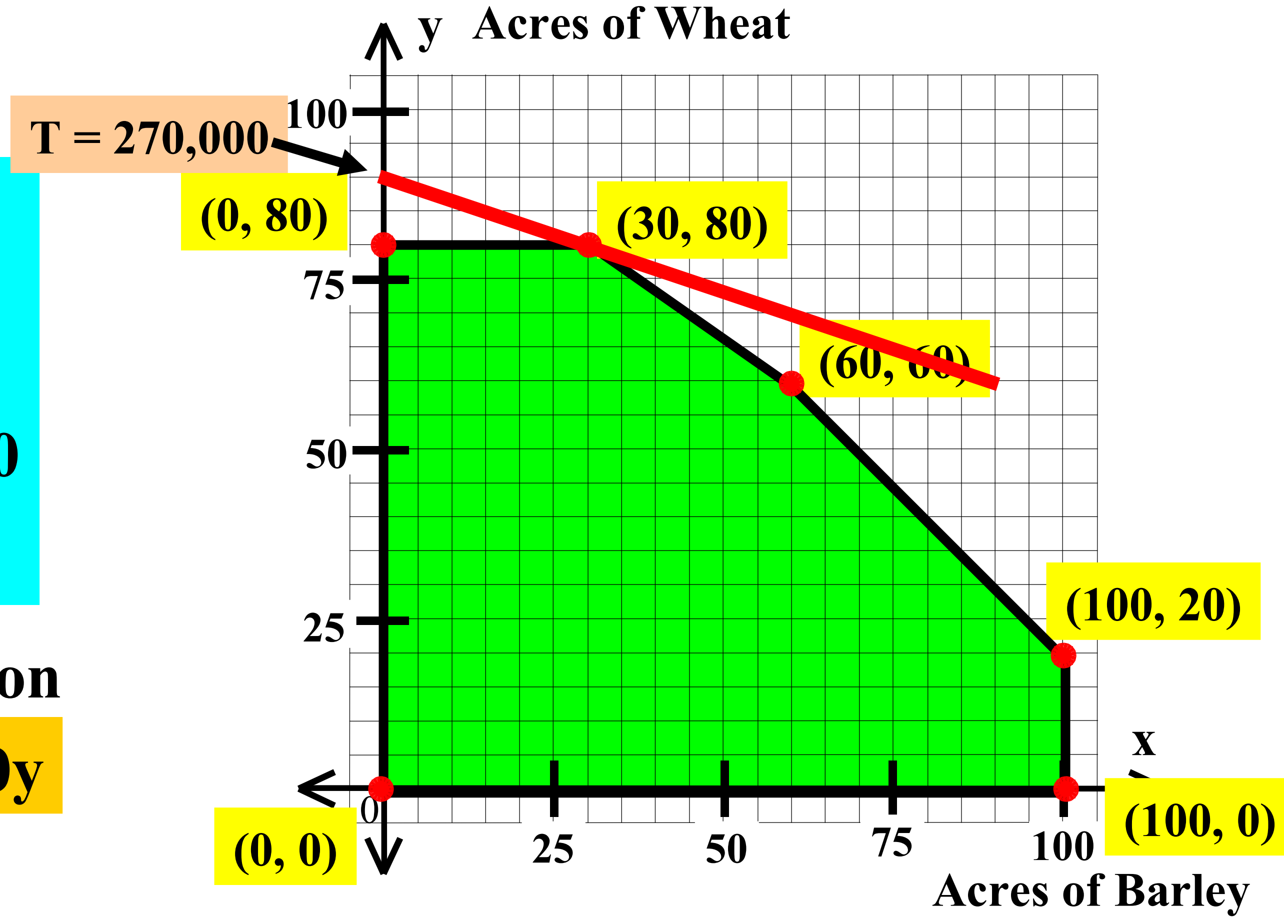
$x \leq 100$

$y \leq 80$

$x + y \leq 120$

$20x + 30y \leq 3000$

$x \geq 0 \qquad y \geq 0$



Objective Function

$T = 1000x + 3000y$

If the objective function, T,

Algebra II Applying Systems of Linear Inequalities

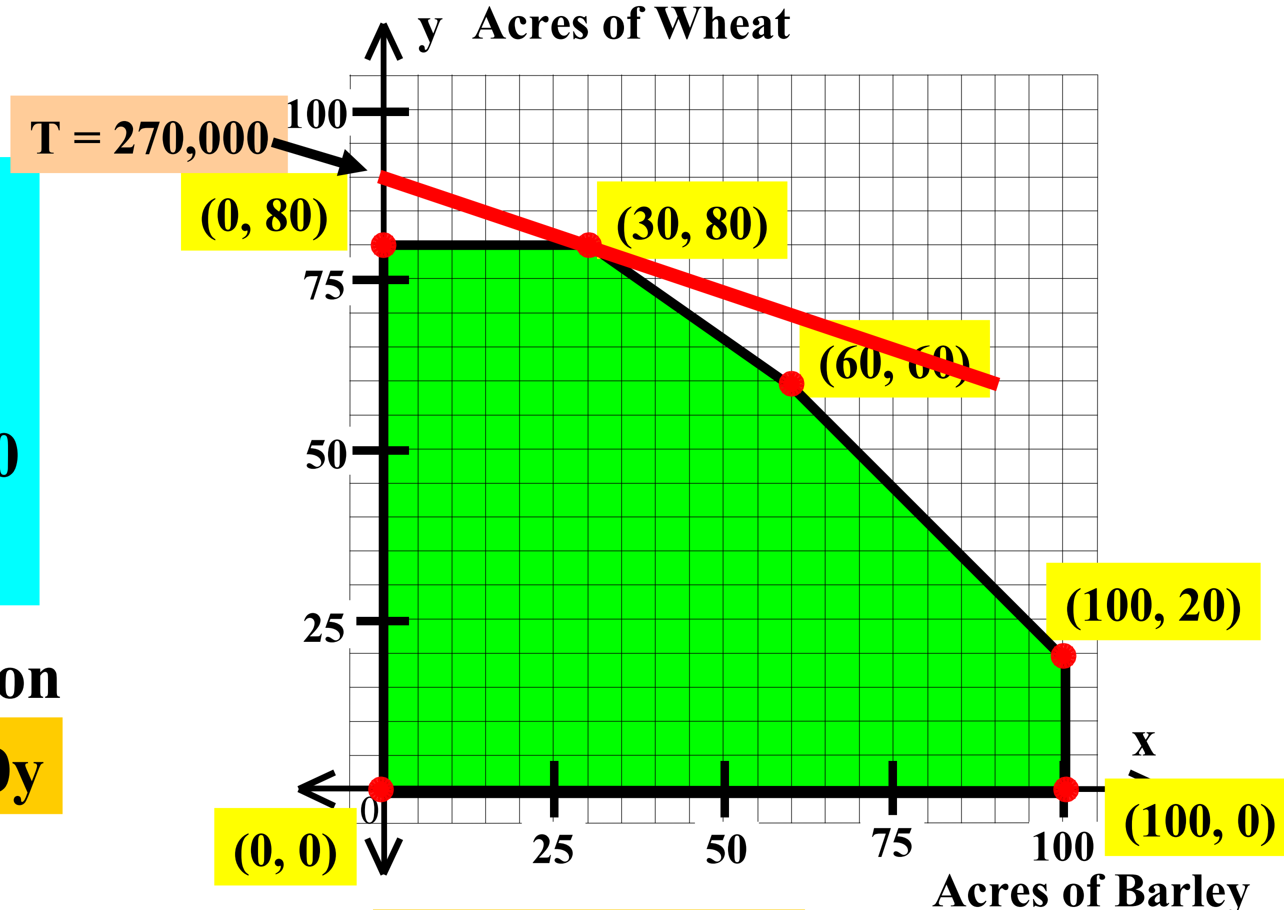
$x \leq 100$

$y \leq 80$

$x + y \leq 120$

$20x + 30y \leq 3000$

$x \geq 0 \quad y \geq 0$



Objective Function

$T = 1000x + 3000y$

If the objective function, T, is a linear function in terms of x and y,

Algebra II   Applying Systems of Linear Inequalities

$x \le 100$

$y \le 80$

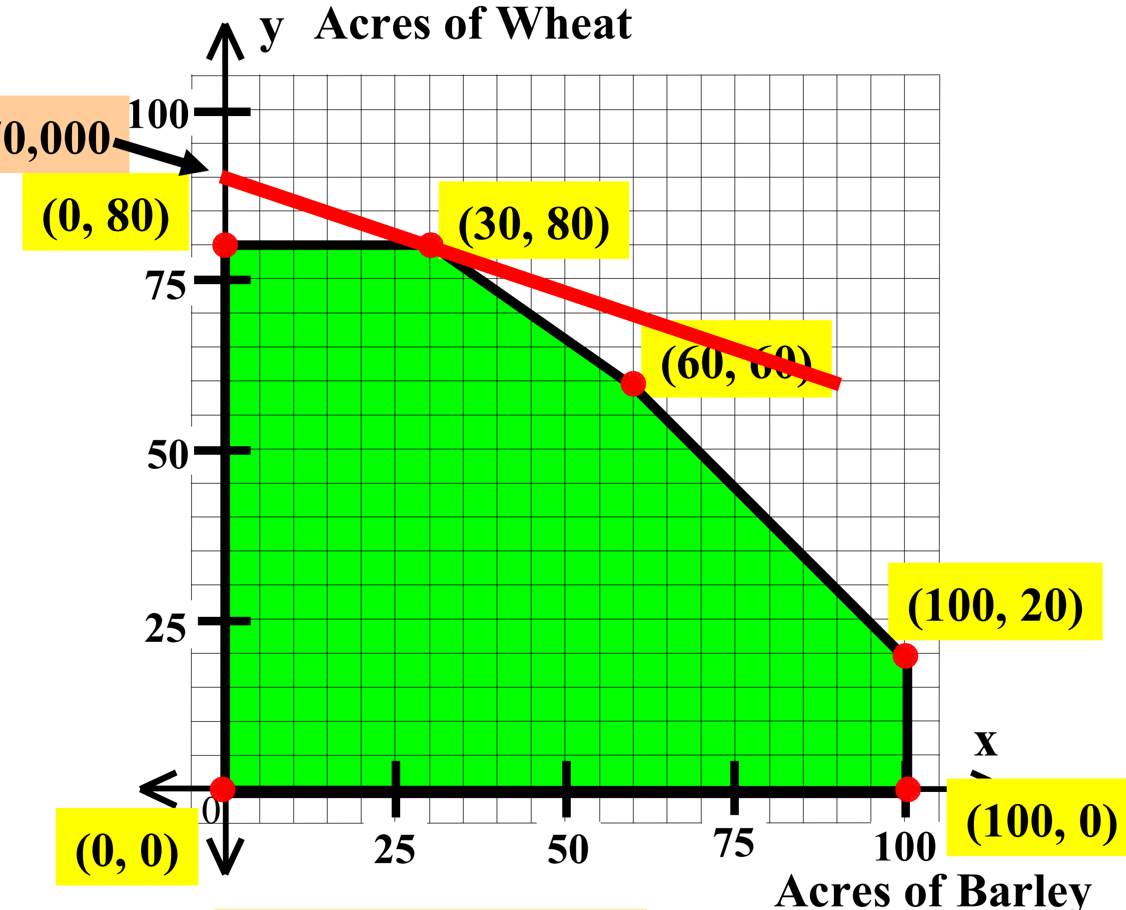
$x + y \le 120$

$20x + 30y \le 3000$

$x \ge 0 \quad y \ge 0$

Objective Function

$T = 1000x + 3000y$



If the objective function, T, is a linear function in terms of x and y, and the region of possible outcomes

Algebra II Applying Systems of Linear Inequalities

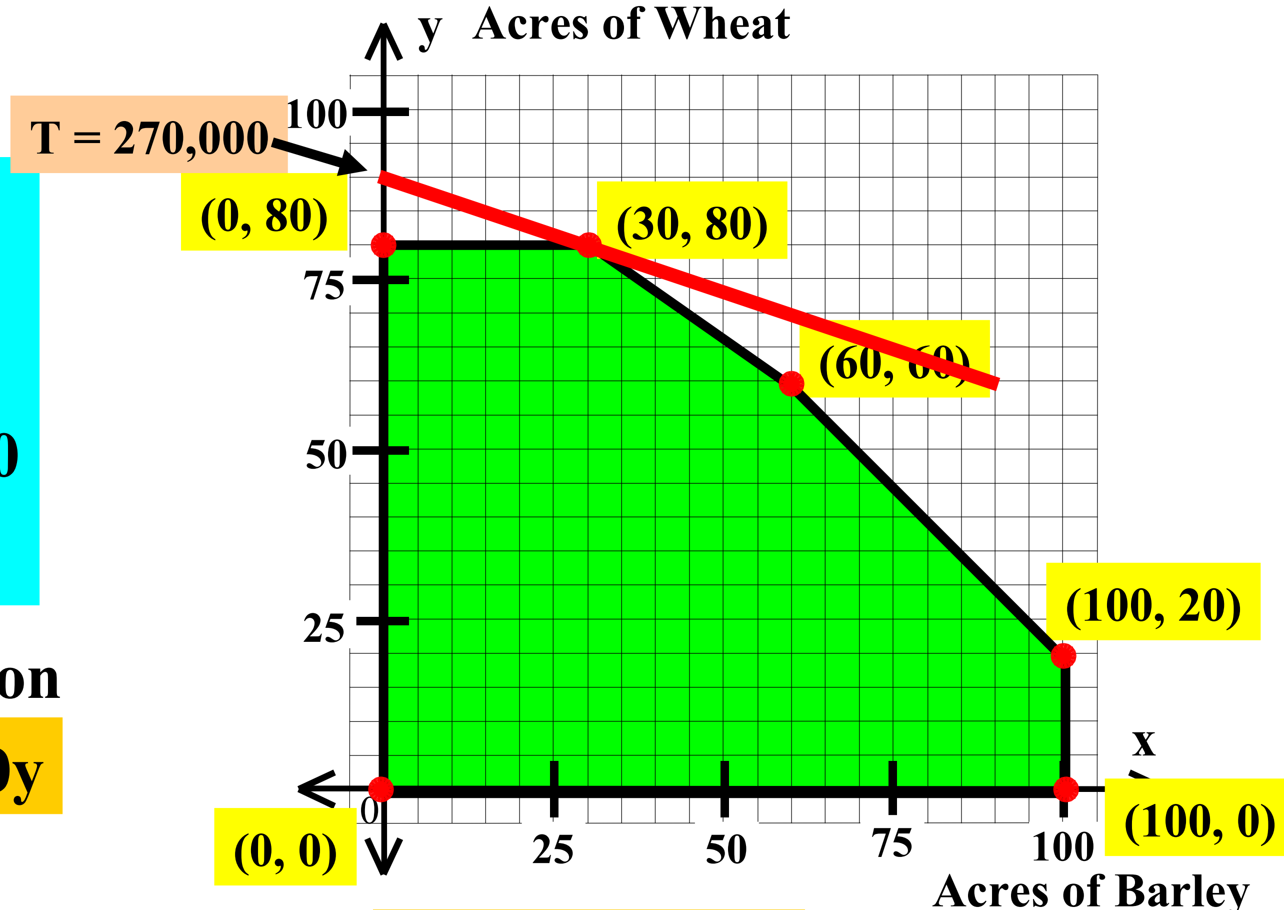
$x \leq 100$

$y \leq 80$

$x + y \leq 120$

$20x + 30y \leq 3000$

$x \geq 0 \quad y \geq 0$



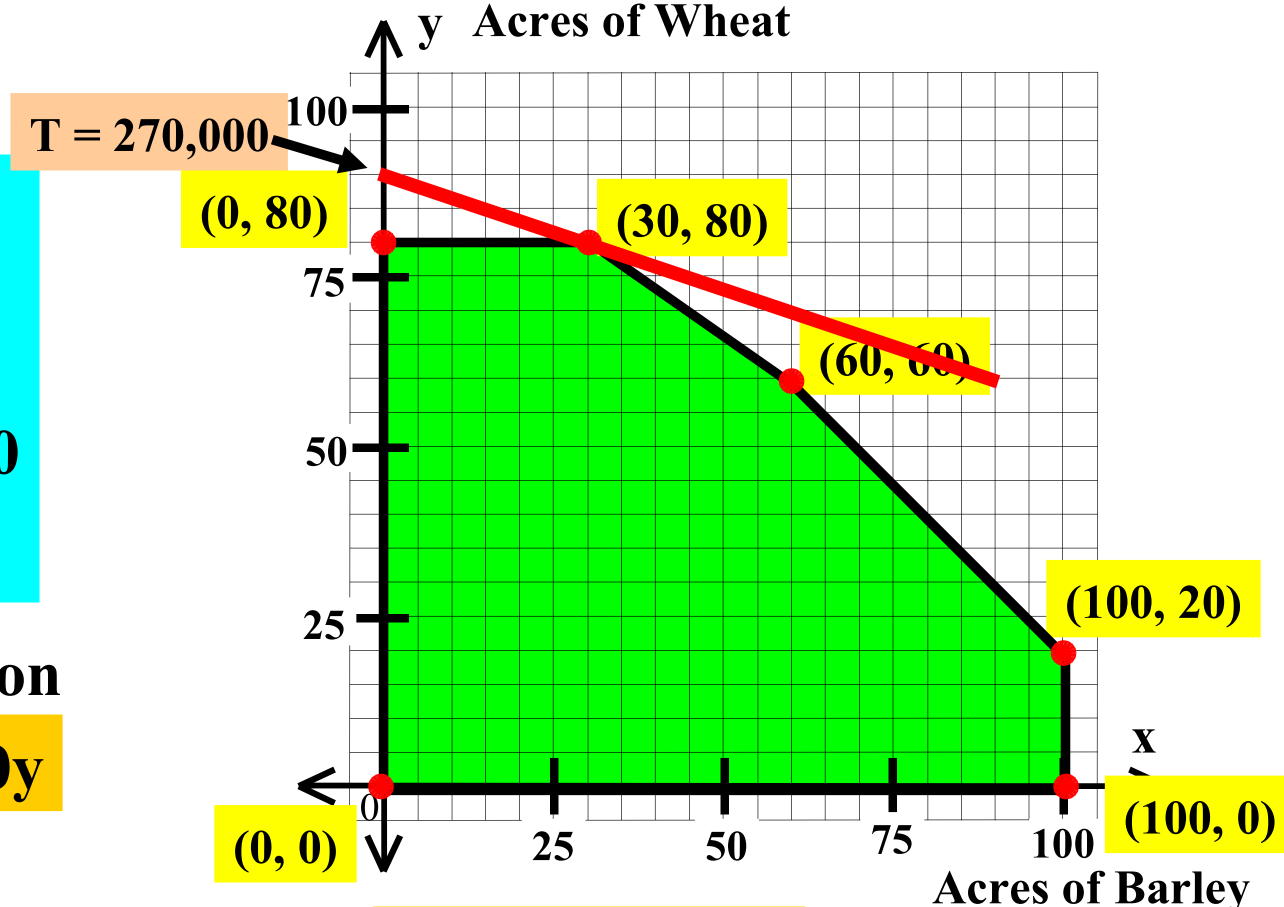
Objective Function

$T = 1000x + 3000y$

If the objective function, T, is a linear function in terms of x and y, and the region of possible outcomes is represented by a convex polygonal region,

Algebra II Applying Systems of Linear Inequalities

$x \leq 100$
$y \leq 80$
$x + y \leq 120$
$20x + 30y \leq 3000$
$x \geq 0 \quad y \geq 0$



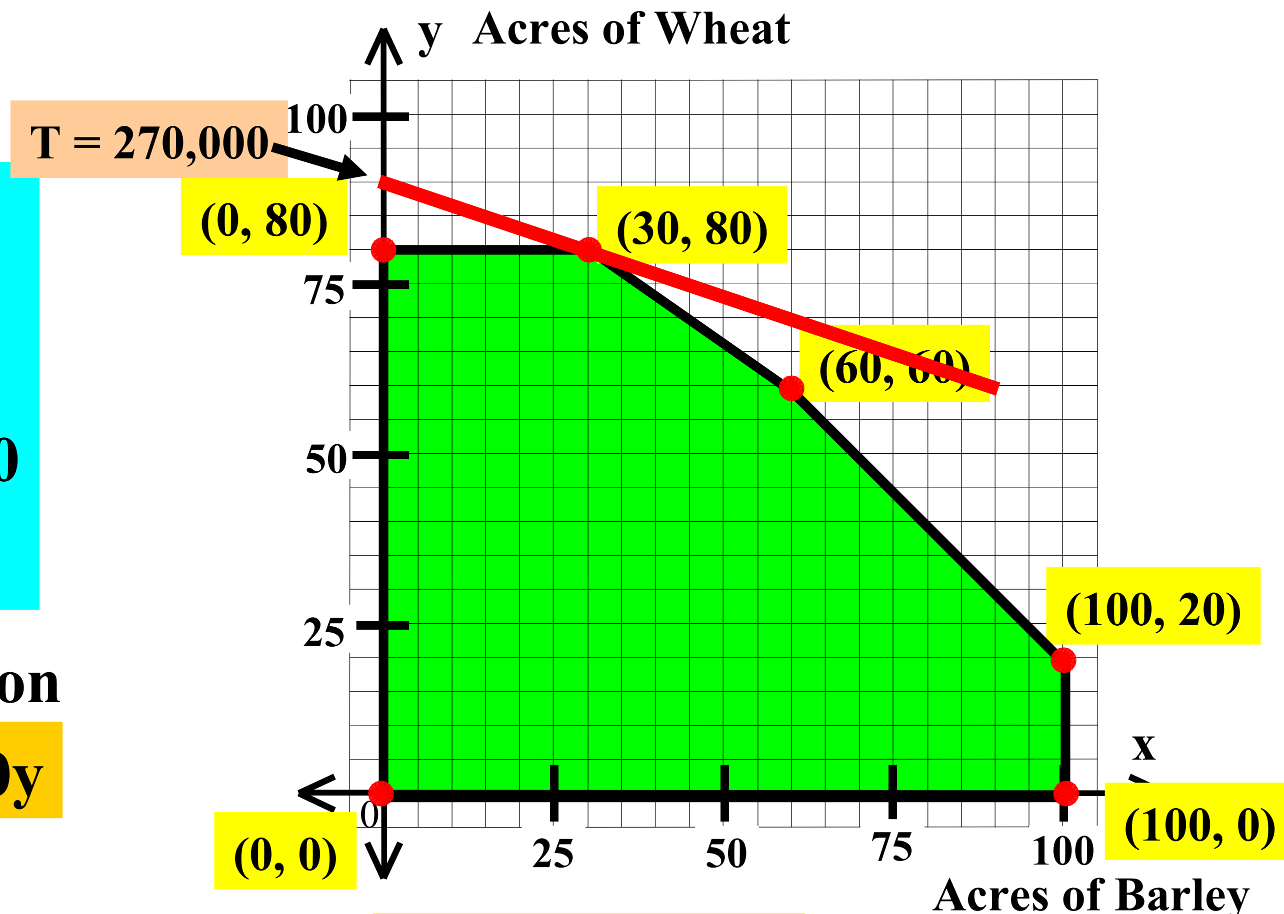
Objective Function

$T = 1000x + 3000y$

If the objective function, T, is a linear function in terms of x and y, and the region of possible outcomes is represented by a convex polygonal region, then the maximum (and the minimum) values T

Algebra II Applying Systems of Linear Inequalities

$x \le 100$
$y \le 80$
$x + y \le 120$
$20x + 30y \le 3000$
$x \ge 0 \quad y \ge 0$



Objective Function

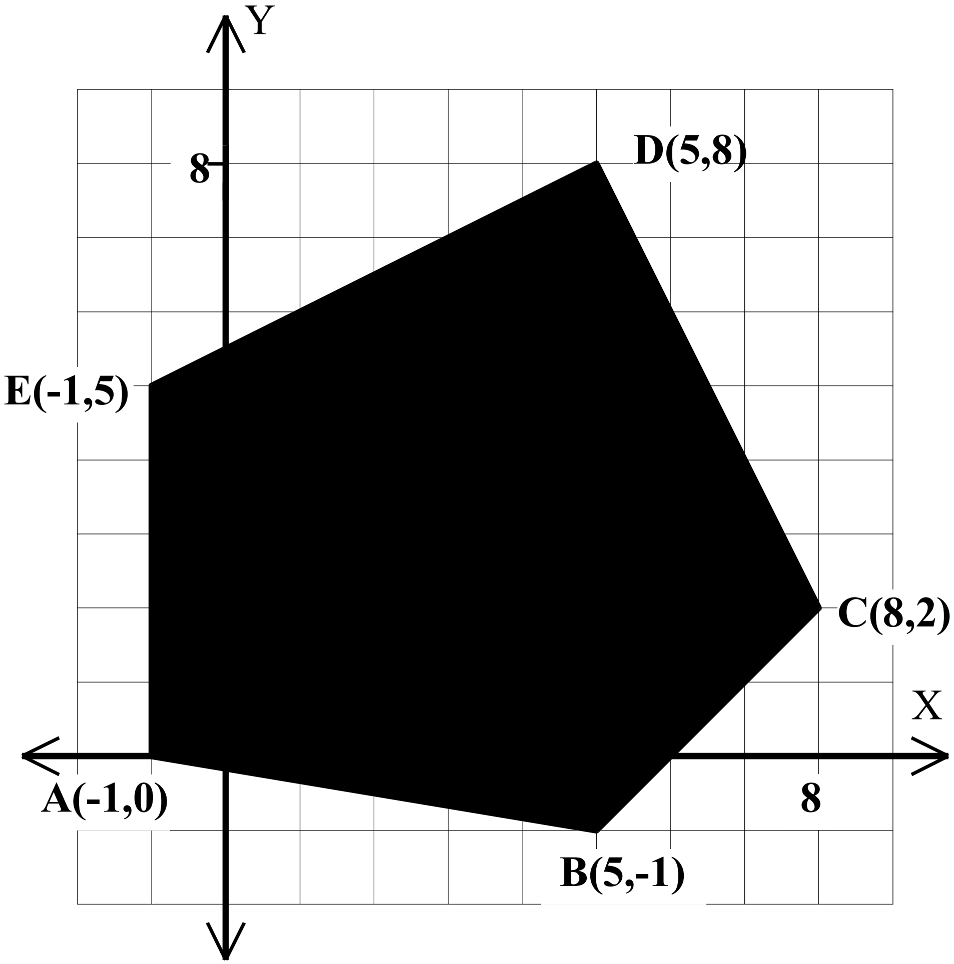
$T = 1000x + 3000y$

If the objective function, T, is a **linear function** in terms of x and y, and the region of possible outcomes is represented by a **convex polygonal region,** then the maximum (and the minimum) values T will occur at a **vertex of the region**.

Algebra II   Class Worksheet #4   Unit 4

Below, you are given a graph of a system of inequalities (system of constraints) and several objective functions. In each case, you are to find both the maximum and the minimum value of the objective function and the vertex at which each occurs.

Algebra II Class Worksheet #4 Unit 4

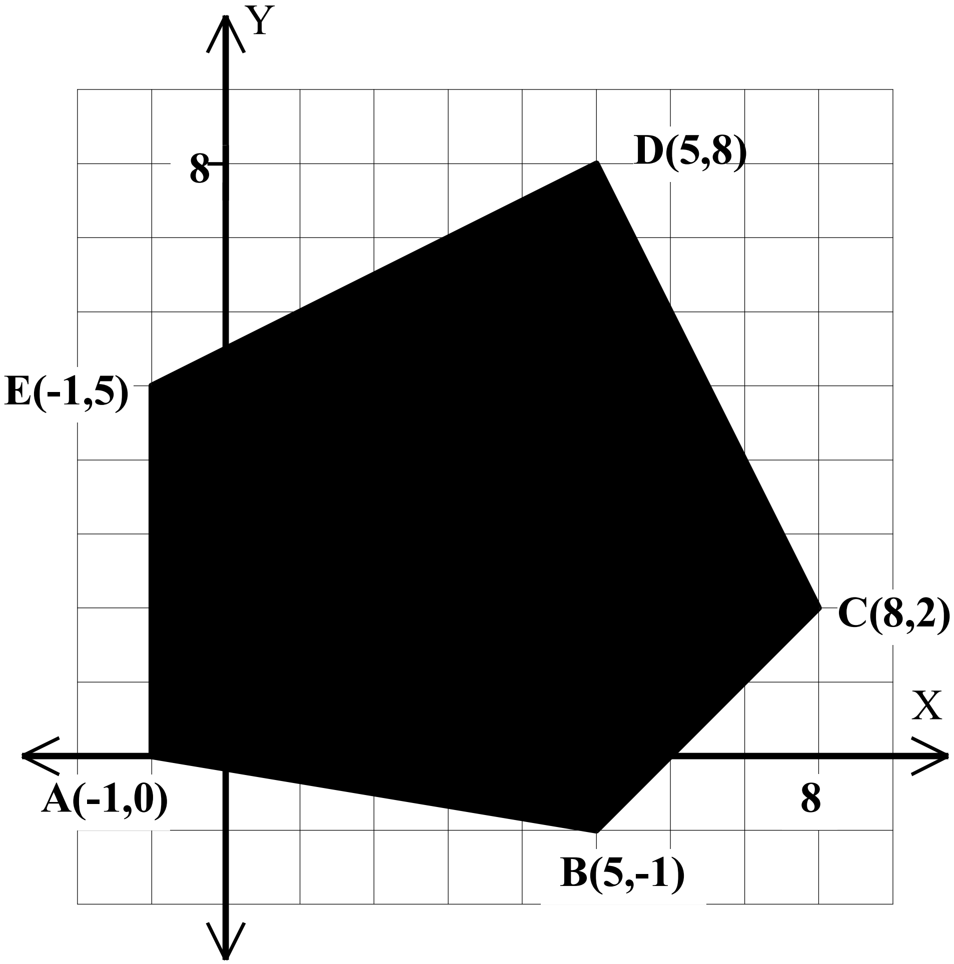


1. $T = 3x + 5y$

T_{max} = ______ at ________

T_{min} = ______ at ________

Algebra II Class Worksheet #4 Unit 4



1. $T = 3x + 5y$

T_{max} = ______ at ________

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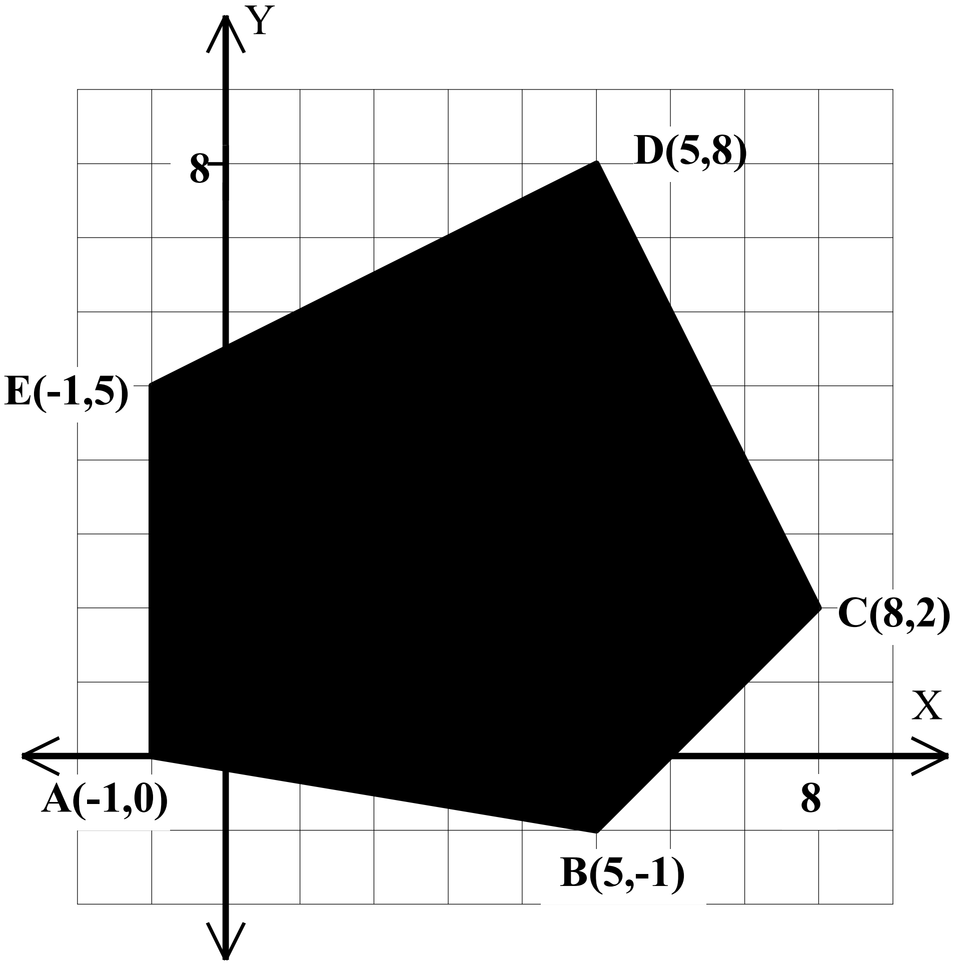
Algebra II Class Worksheet #4 Unit 4



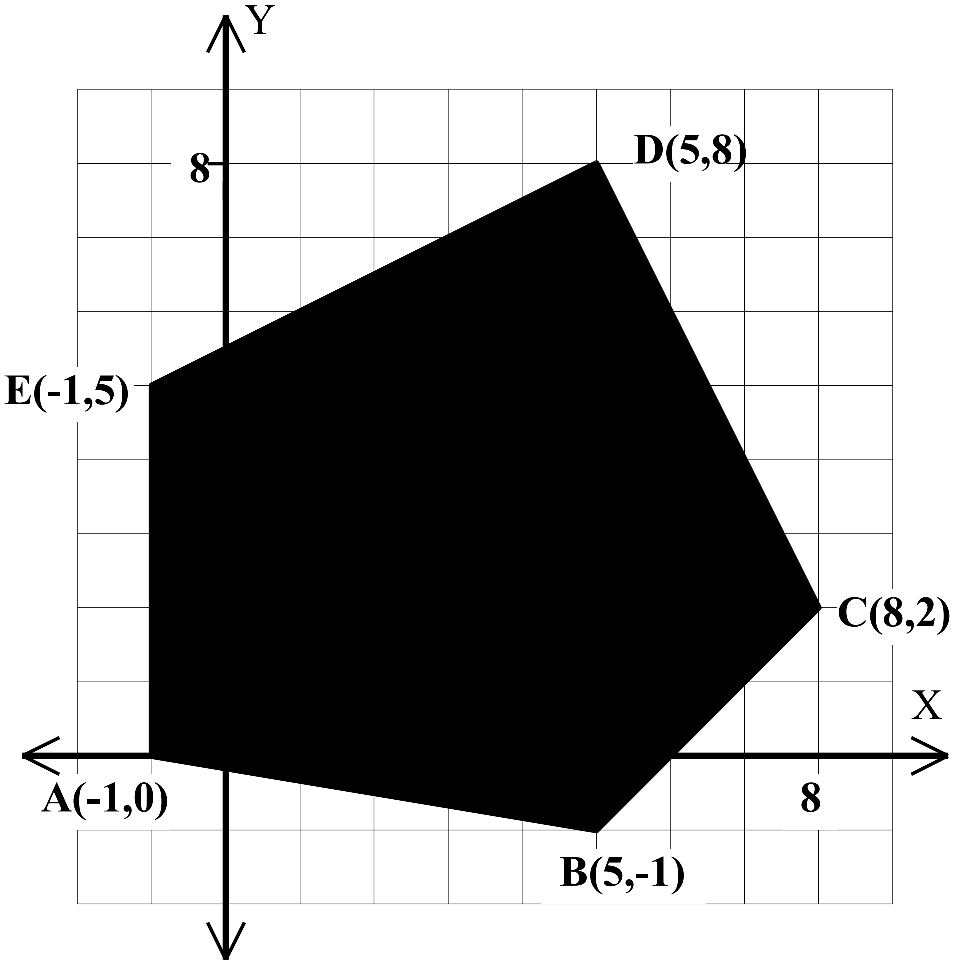
The **maximum** and the **minimum** values of T will occur at a vertex of the region.

1. $T = 3x + 5y$

T_{max} = ______ at ________

T_{min} = ______ at ________

Algebra II Class Worksheet #4 Unit 4



The **maximum** and the **minimum** values of T will occur at a vertex of the region.

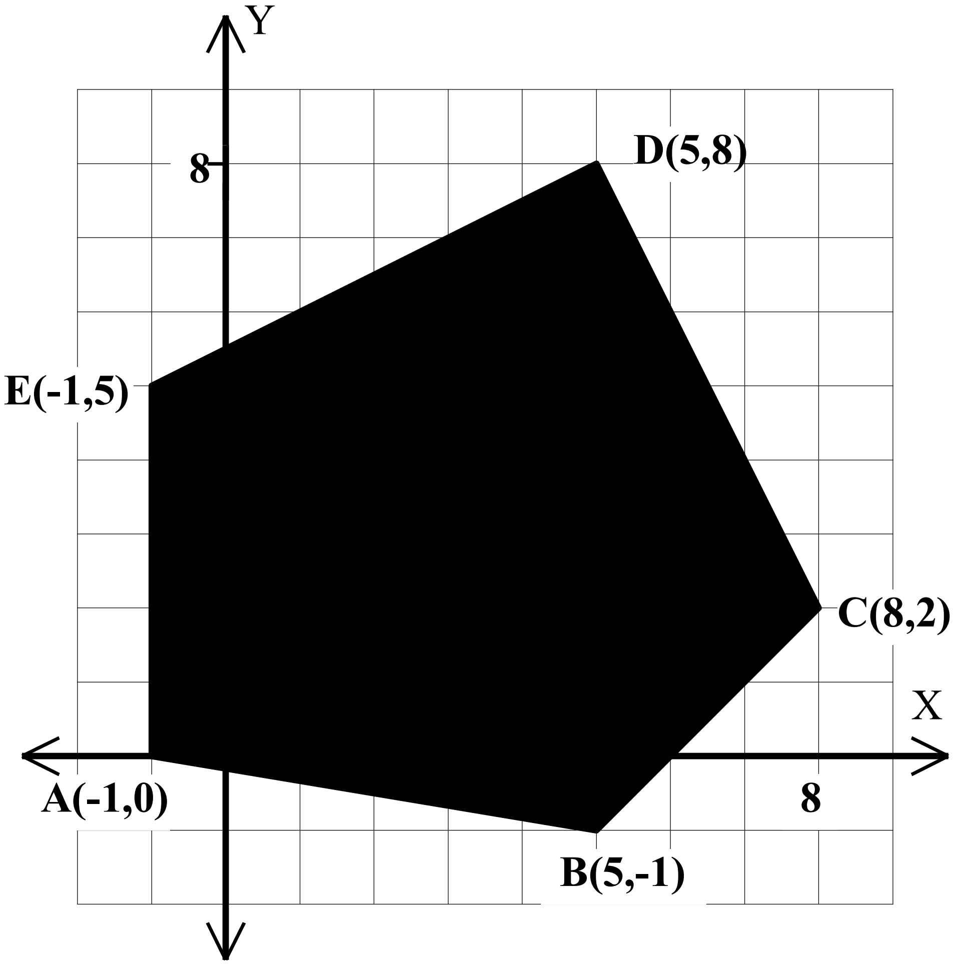
1. $T = 3x + 5y$

T_{max} = ______ at ________

T_{min} = ______ at ________

At A(-1,0)

Algebra II Class Worksheet #4 Unit 4



The **maximum** and the **minimum** values of T will occur at a vertex of the region.

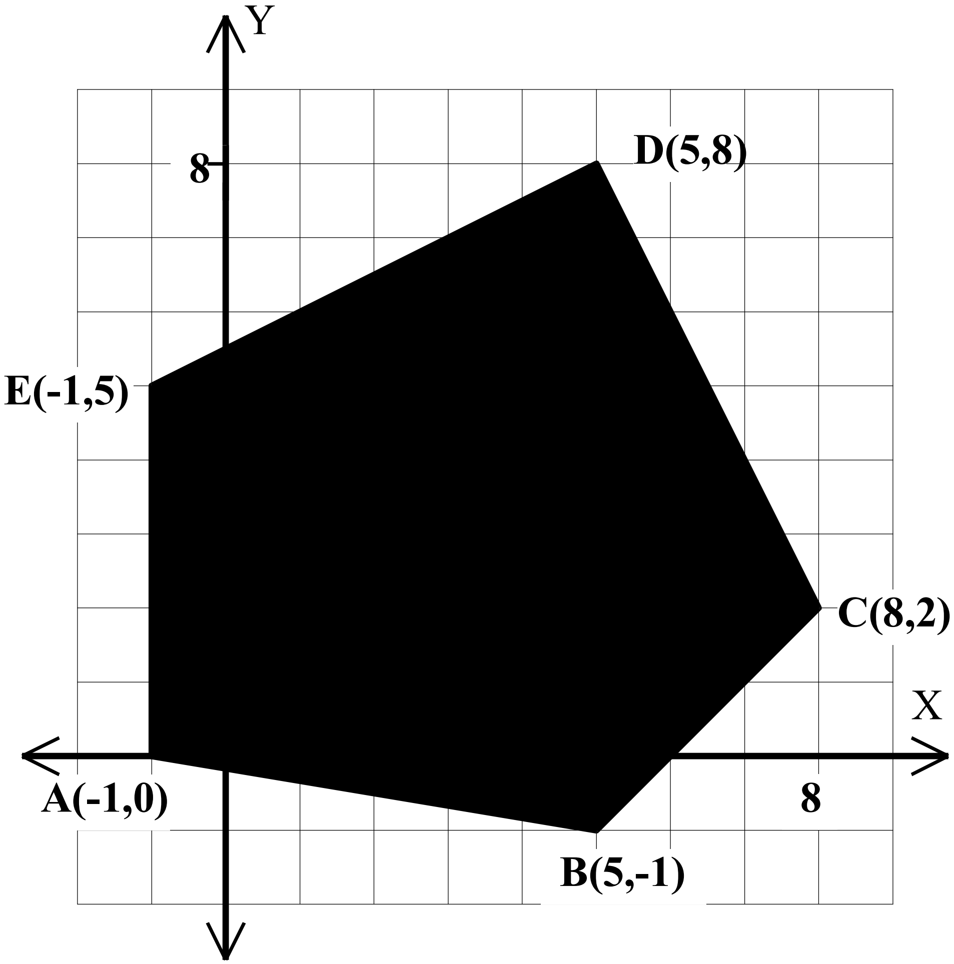
1. $T = 3x + 5y$

T_{max} = ______ at ________

T_{min} = ______ at ________

At A(-1,0) $\Longrightarrow$ T =

Algebra II   Class Worksheet #4   Unit 4



The **maximum** and the **minimum** values of T will occur at a vertex of the region.

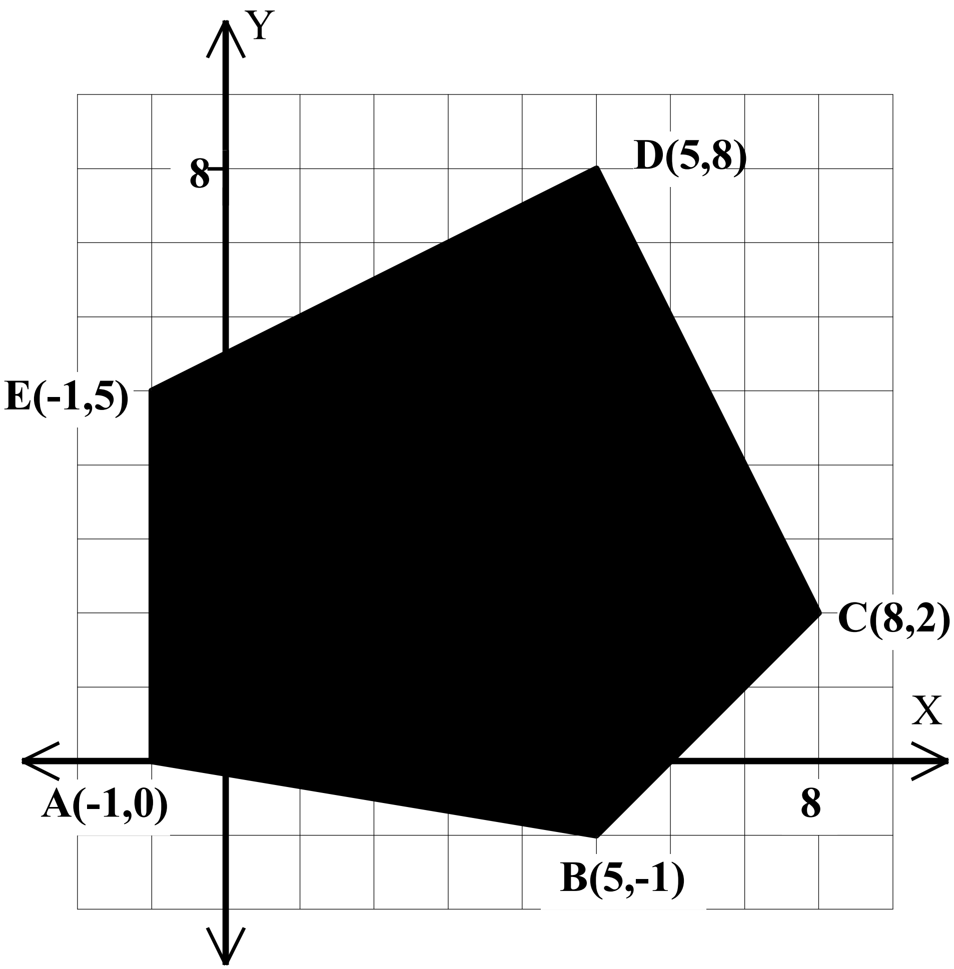
1. $T = 3x + 5y$

T_{max} = ______ at ________

T_{min} = ______ at ________

At A(-1,0) ⟹ T = -3

Algebra II Class Worksheet #4 Unit 4



The **maximum** and the **minimum** values of T will occur at a vertex of the region.

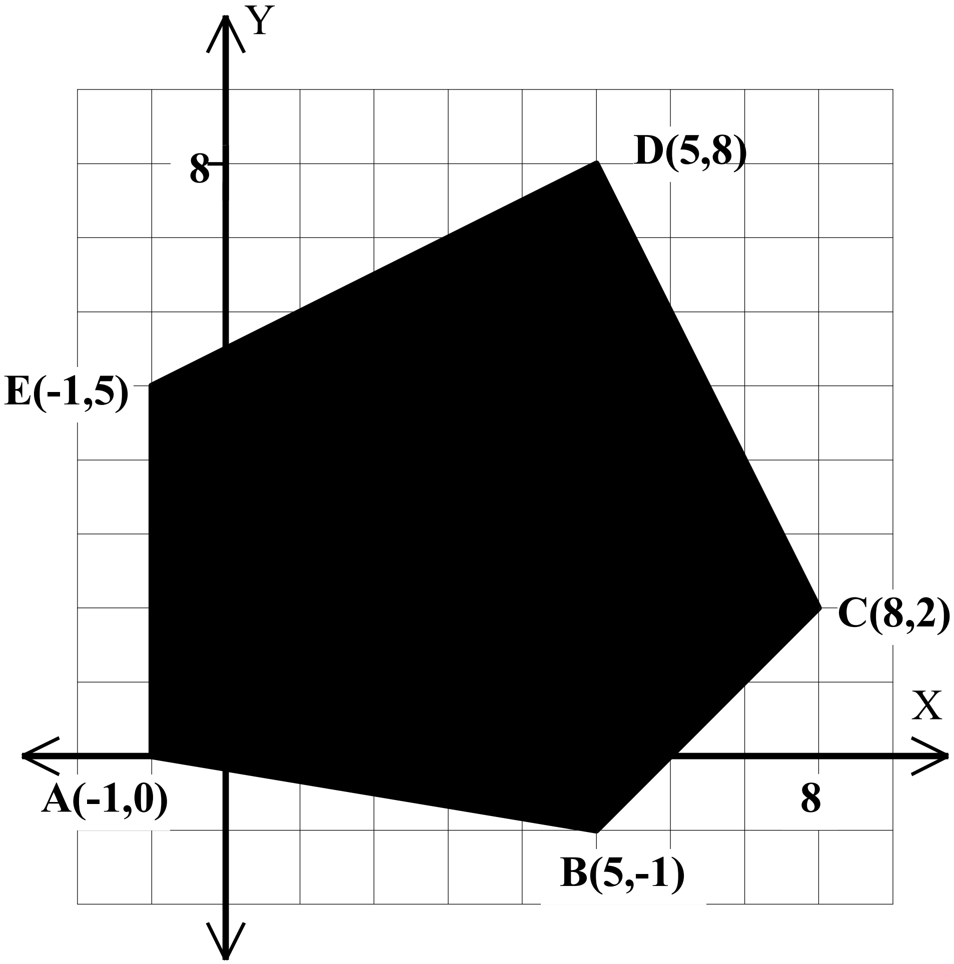
1. $T = 3x + 5y$

T_{max} = ______ at ________

T_{min} = ______ at ________

At A(-1,0) $\Longrightarrow$ T = -3 +

Algebra II   Class Worksheet #4   Unit 4



The **maximum** and the **minimum** values of T will occur at a vertex of the region.

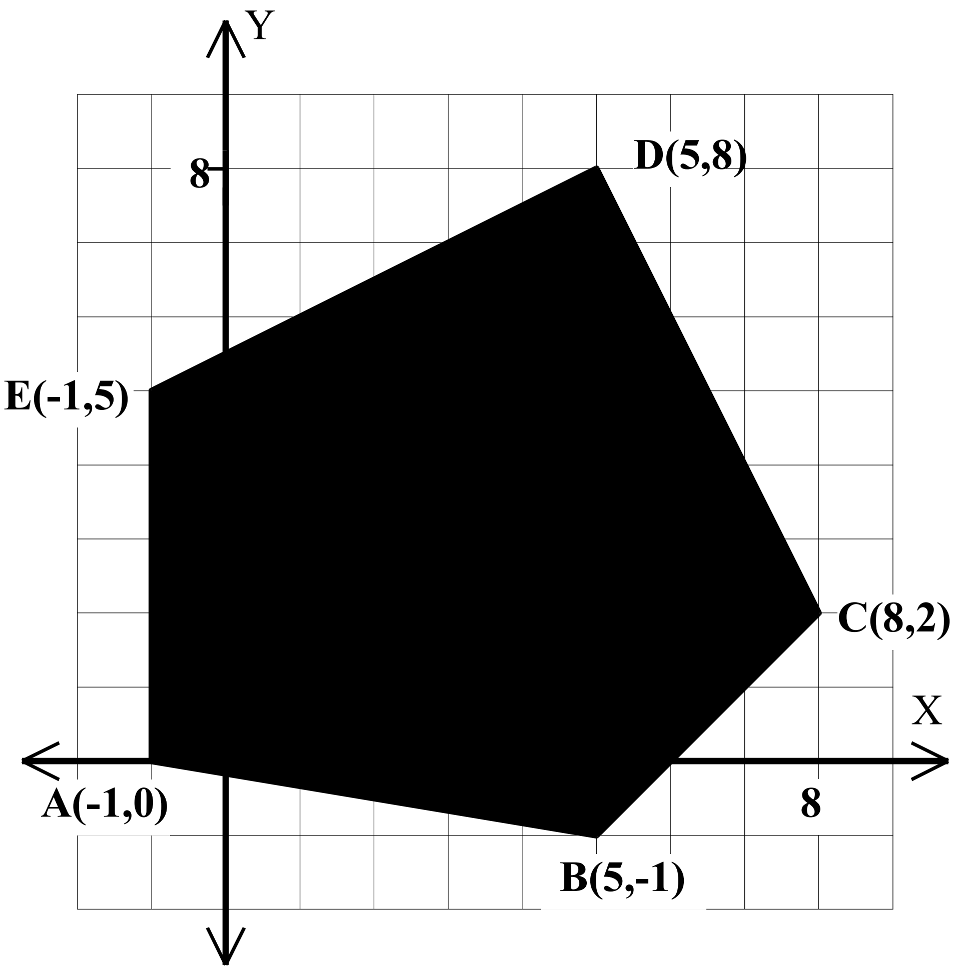
1. $T = 3x + 5y$

T_{max} = ______ at ________

T_{min} = ______ at ________

At A(-1,0) $\Longrightarrow$ T = -3 + 0

Algebra II Class Worksheet #4 Unit 4



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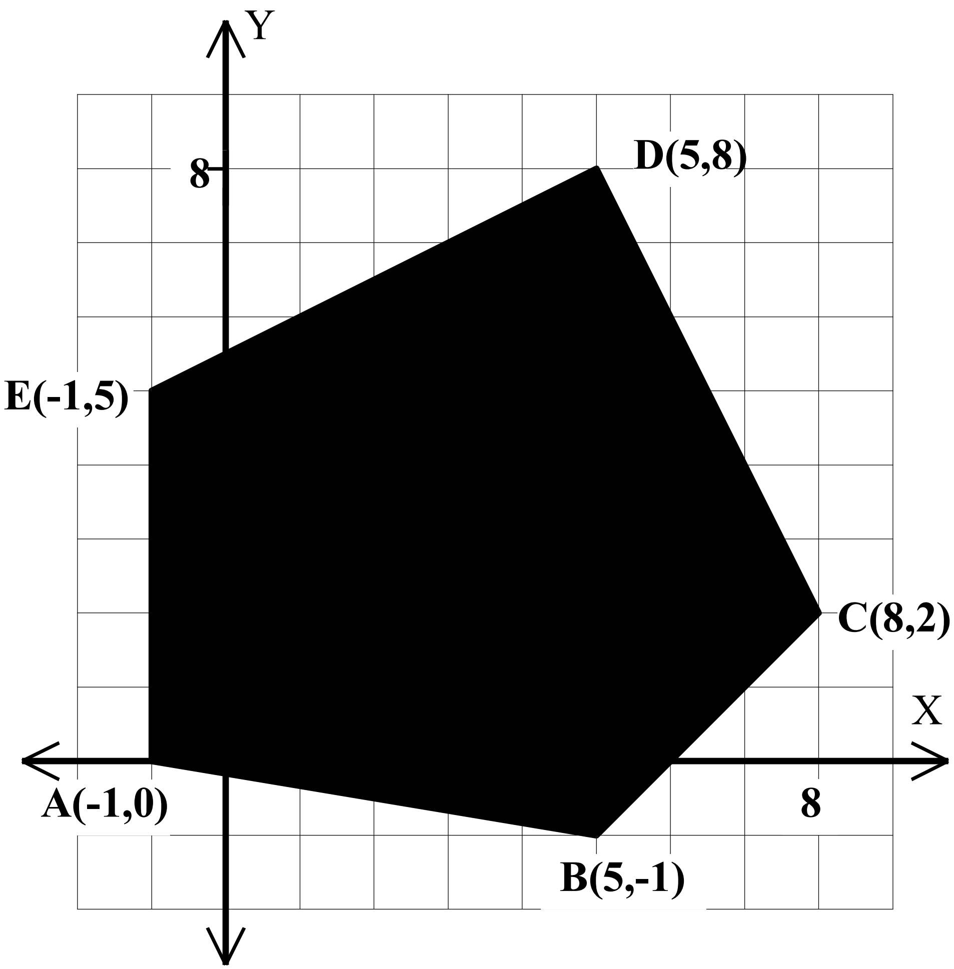
1. $T = 3x + 5y$

T_{max} = ______ at ________

T_{min} = ______ at ________

At A(-1,0) $\Longrightarrow$ T = -3 + 0 =

Algebra II Class Worksheet #4 Unit 4



The **maximum** and the **minimum** values of T will occur at a vertex of the region.

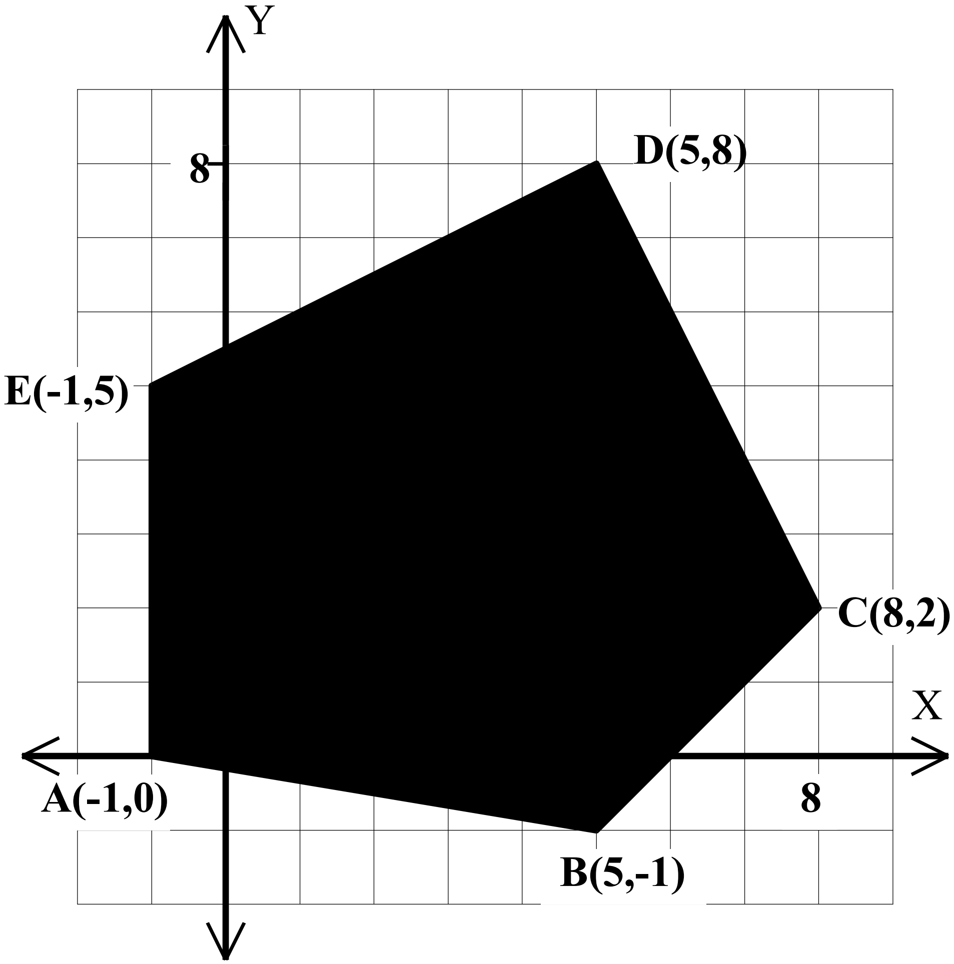
1. $T = 3x + 5y$

T_{max} = ______ at _________

T_{min} = ______ at _________

At A(-1,0) $\Longrightarrow$ T = -3 + 0 = **-3**

Algebra II Class Worksheet #4 Unit 4



The **maximum** and the **minimum** values of T will occur at a vertex of the region.

1. $T = 3x + 5y$

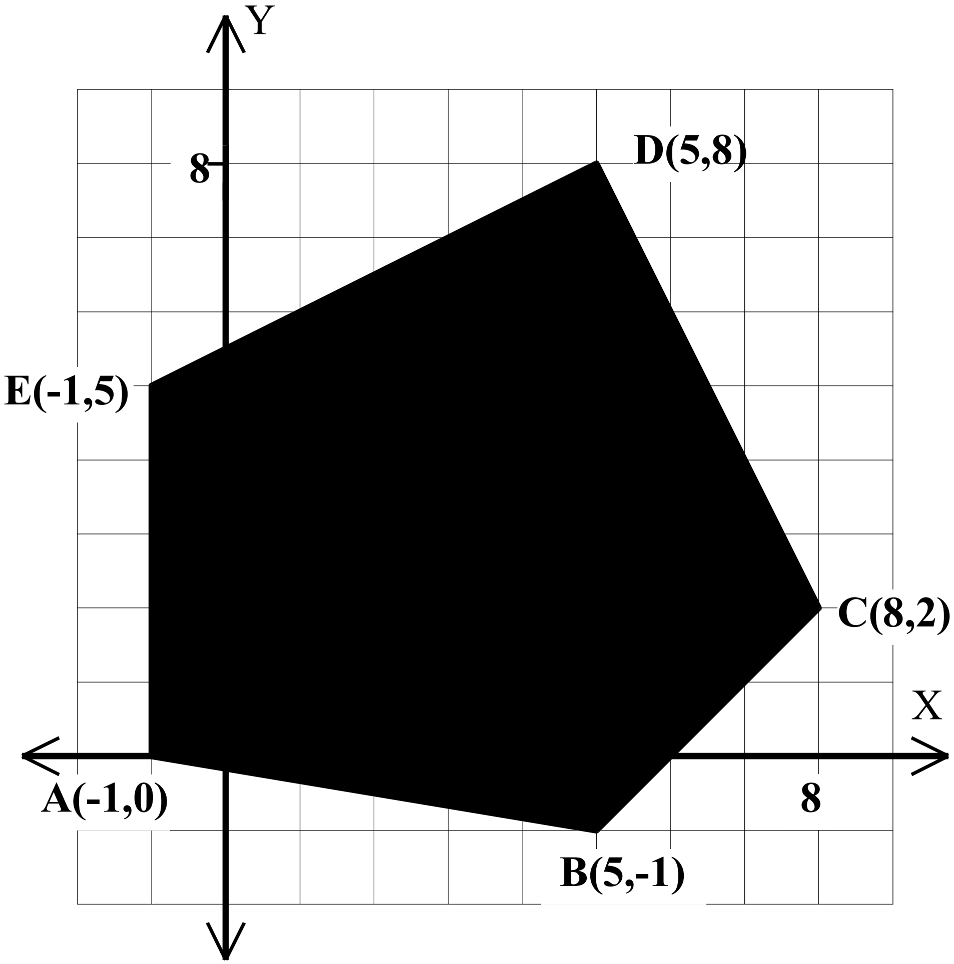
T_{max} = ______ at ________

T_{min} = ______ at ________

At A(-1,0) ⟹ T = -3 + 0 = **-3**

At B(5,-1)

Algebra II   Class Worksheet #4   Unit 4



The **maximum** and the **minimum** values of T will occur at a vertex of the region.

1. $T = 3x + 5y$

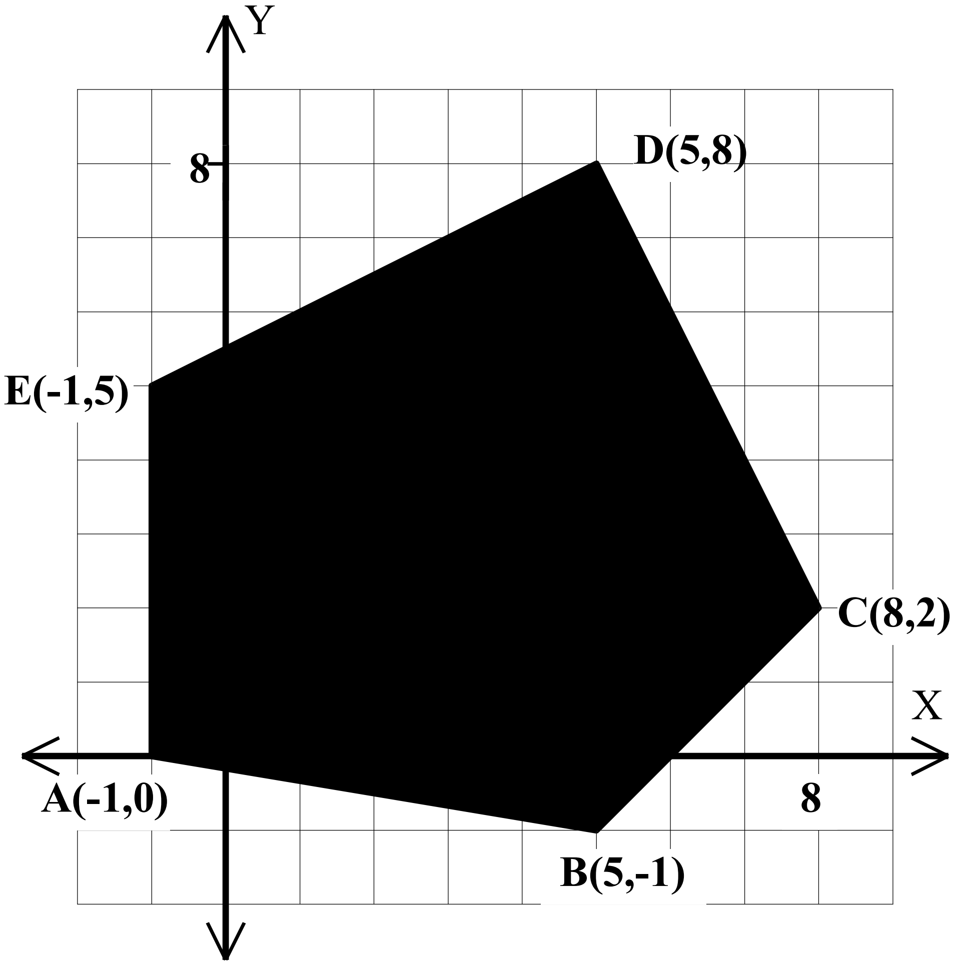
T_{max} = ______ at _________

T_{min} = ______ at _________

At A(-1,0) $\Rightarrow$ T = -3 + 0 = **-3**

At B(5,-1) $\Rightarrow$ T =

Algebra II Class Worksheet #4 Unit 4



The **maximum** and the **minimum** values of T will occur at a vertex of the region.

1. $T = 3x + 5y$

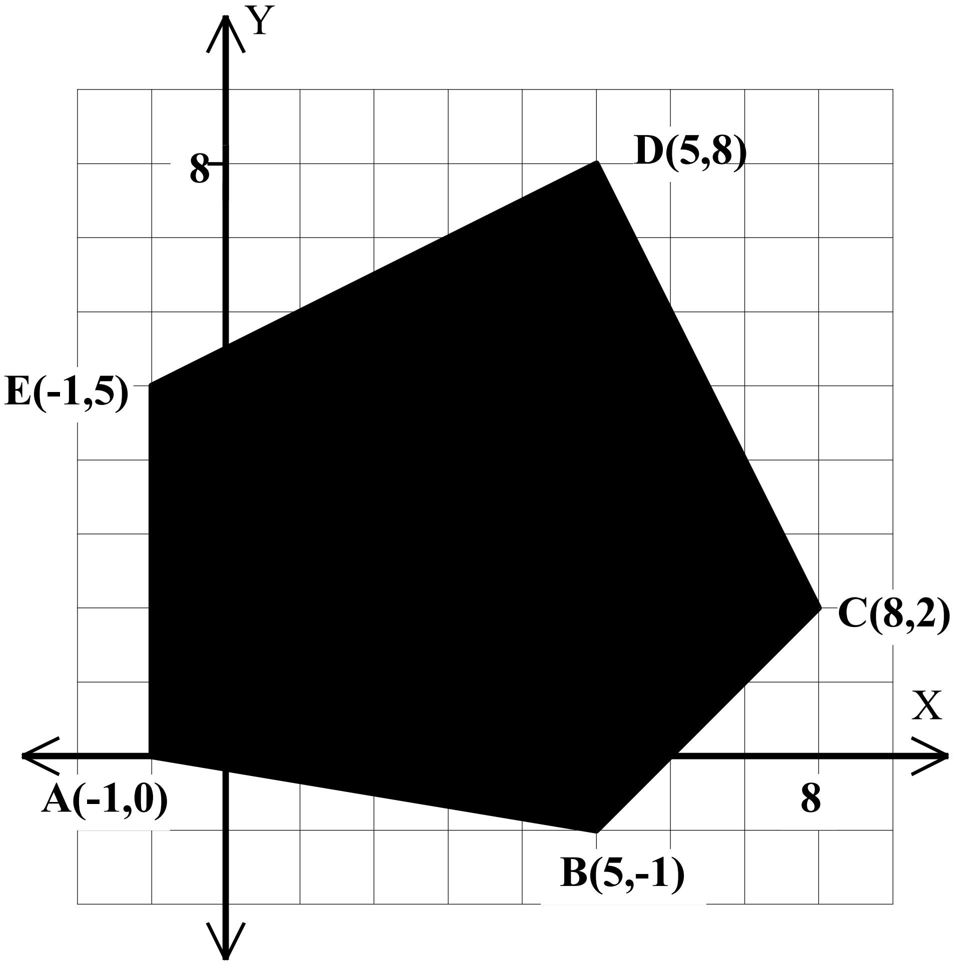
T_{max} = ______ at ________

T_{min} = ______ at ________

At A(-1,0) $\Rightarrow$ T = -3 + 0 = **-3**

At B(5,-1) $\Rightarrow$ T = 15

Algebra II Class Worksheet #4 Unit 4



The **maximum** and the **minimum** values of T will occur at a vertex of the region.

1. $T = 3x + 5y$

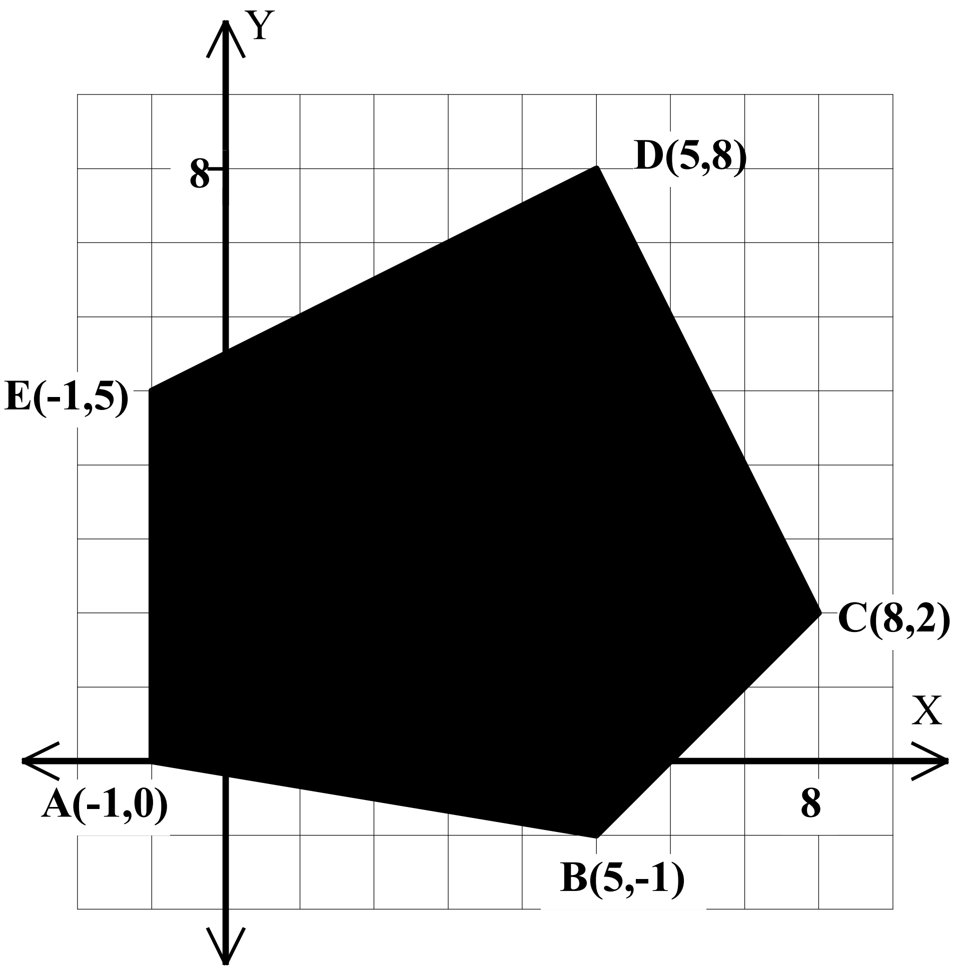
T_{max} = ______ at ________

T_{min} = ______ at ________

At A(-1,0) $\Rightarrow$ $T = -3 + 0 = \mathbf{-3}$

At B(5,-1) $\Rightarrow$ $T = 15 +$

Algebra II Class Worksheet #4 Unit 4



The **maximum** and the **minimum** values of T will occur at a vertex of the region.

1. $T = 3x + 5y$

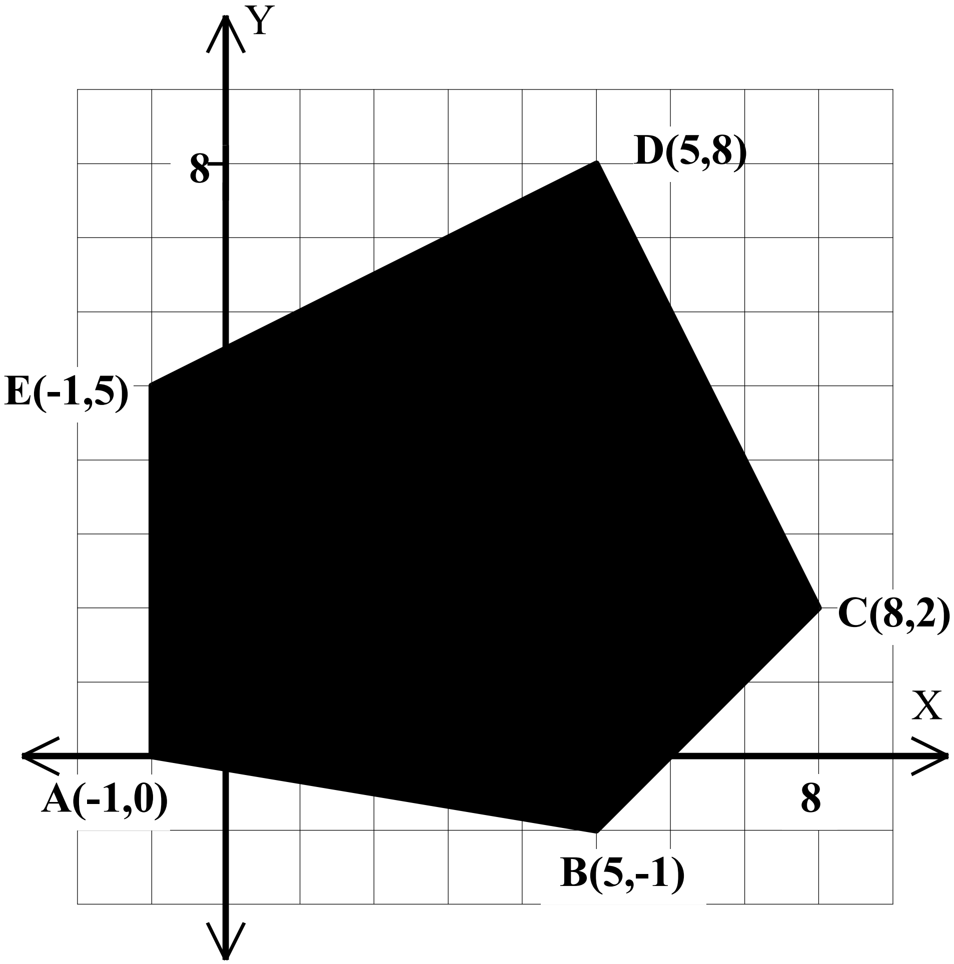
T_{max} = ______ at ________

T_{min} = ______ at ________

At A(-1,0) $\Rightarrow$ T = -3 + 0 = **-3**

At B(5,-1) $\Rightarrow$ T = 15 + -5

Algebra II Class Worksheet #4 Unit 4



The **maximum** and the **minimum** values of T will occur at a vertex of the region.

1. $T = 3x + 5y$

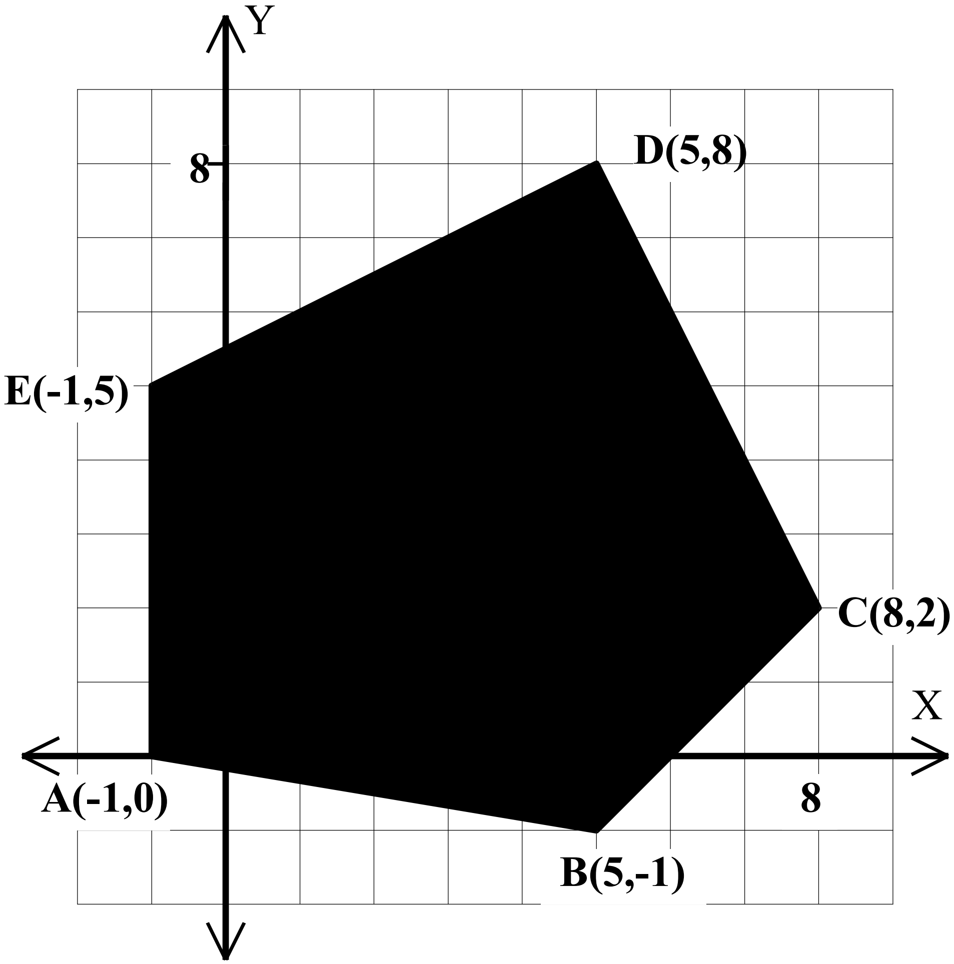
T_{max} = ______ at ________

T_{min} = ______ at ________

At A(-1,0) $\Rightarrow$ T = -3 + 0 = **-3**

At B(5,-1) $\Rightarrow$ T = 15 + -5 =

Algebra II Class Worksheet #4 Unit 4



The **maximum** and the **minimum** values of T will occur at a vertex of the region.

1. $T = 3x + 5y$

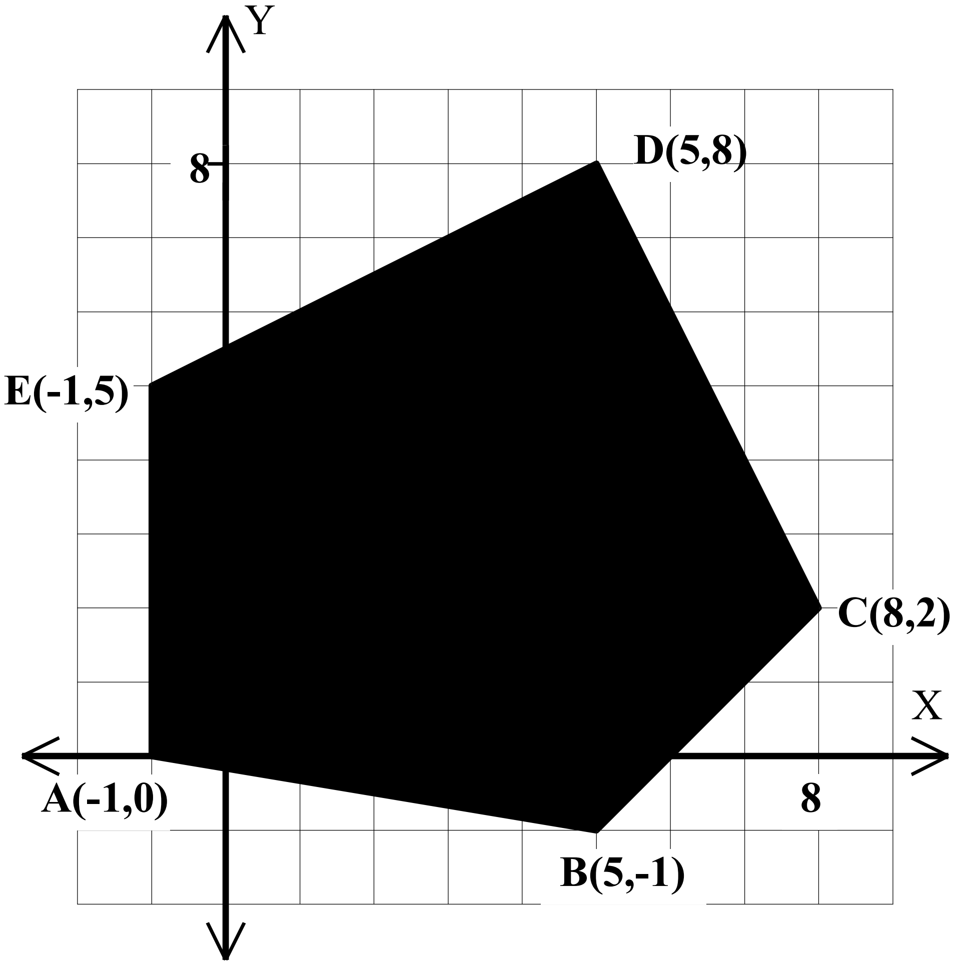
T_{max} = ______ at ________

T_{min} = ______ at ________

At A(-1,0) $\Rightarrow$ T = -3 + 0 = **-3**

At B(5,-1) $\Rightarrow$ T = 15 + -5 = **10**

Algebra II Class Worksheet #4 Unit 4



The **maximum** and the **minimum** values of T will occur at a vertex of the region.

1. $T = 3x + 5y$

T_{max} = ______ at ________

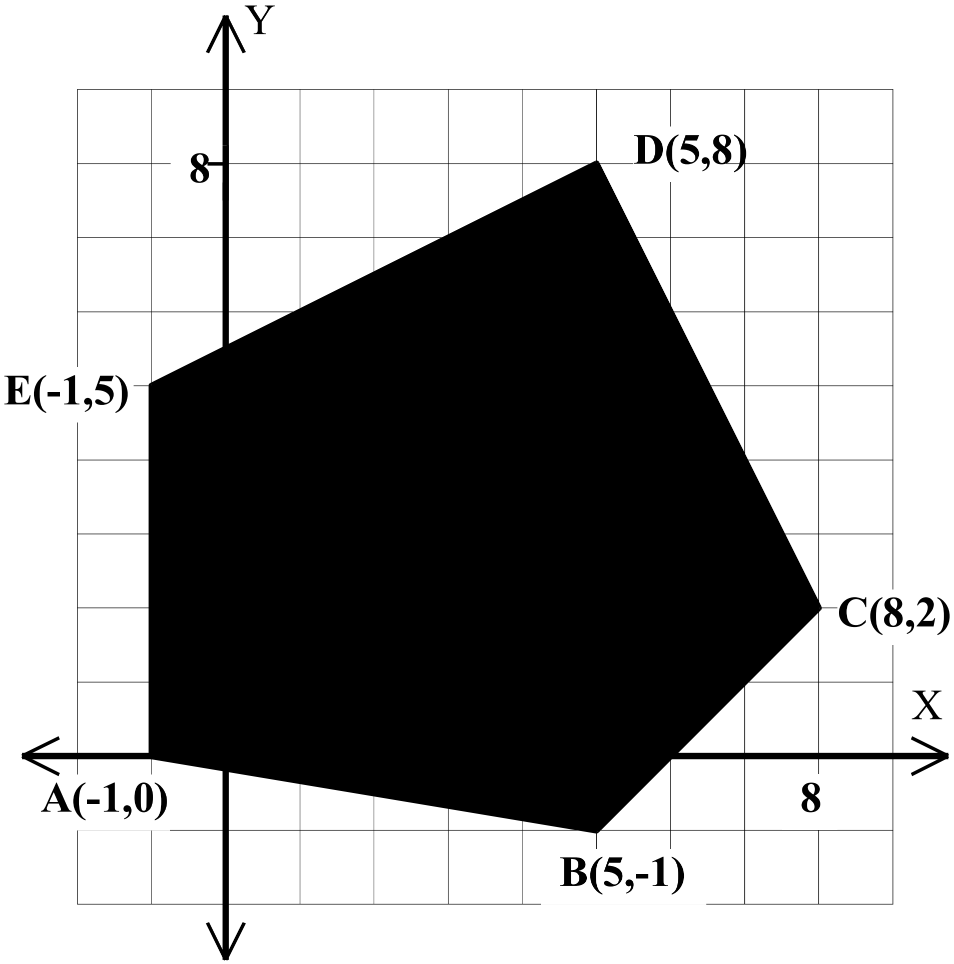
T_{min} = ______ at ________

At A(-1,0) $\Rightarrow$ T = -3 + 0 = **-3**

At B(5,-1) $\Rightarrow$ T = 15 + -5 = **10**

At C(8,2)

Algebra II Class Worksheet #4 Unit 4



The **maximum** and the **minimum** values of T will occur at a vertex of the region.

1. $T = 3x + 5y$

T_{max} = ______ at ________

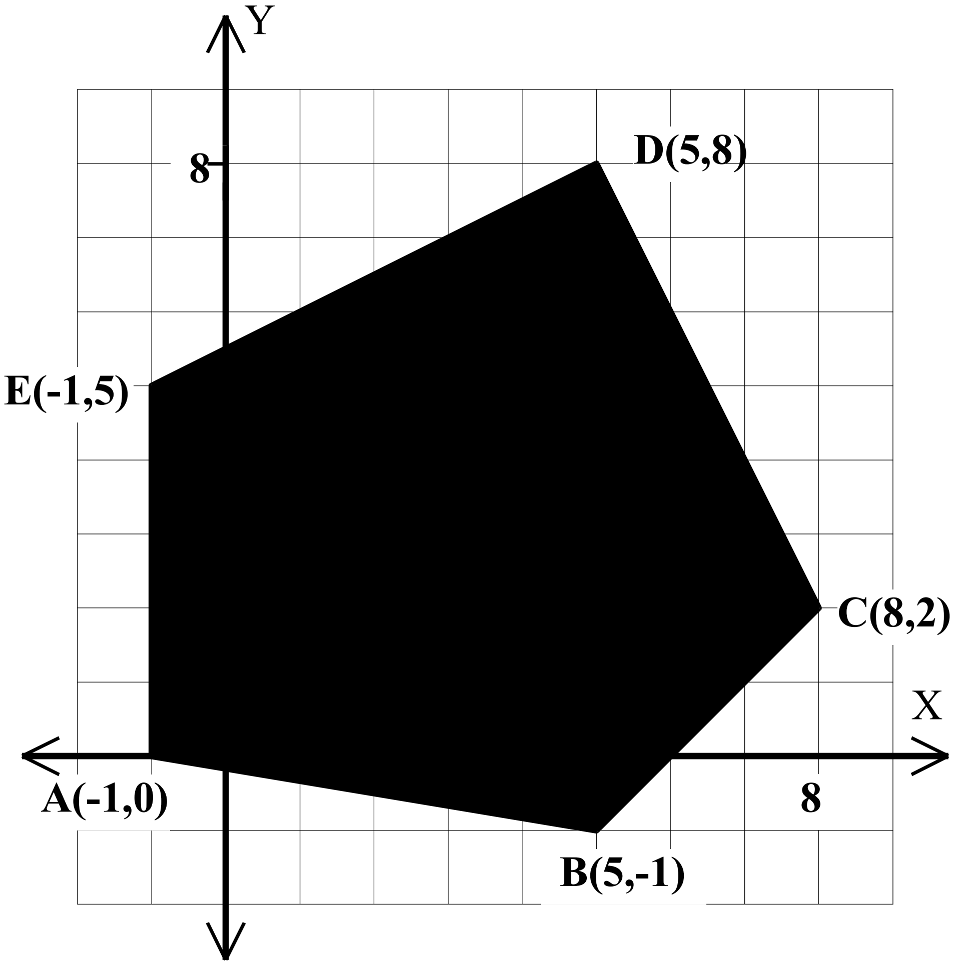
T_{min} = ______ at ________

At A(-1,0) $\Rightarrow$ T = -3 + 0 = **-3**

At B(5,-1) $\Rightarrow$ T = 15 + -5 = **10**

At C(8,2) $\Rightarrow$ T =

Algebra II Class Worksheet #4 Unit 4



The **maximum** and the **minimum** values of T will occur at a vertex of the region.

1. $T = 3x + 5y$

T_{max} = ______ at ________

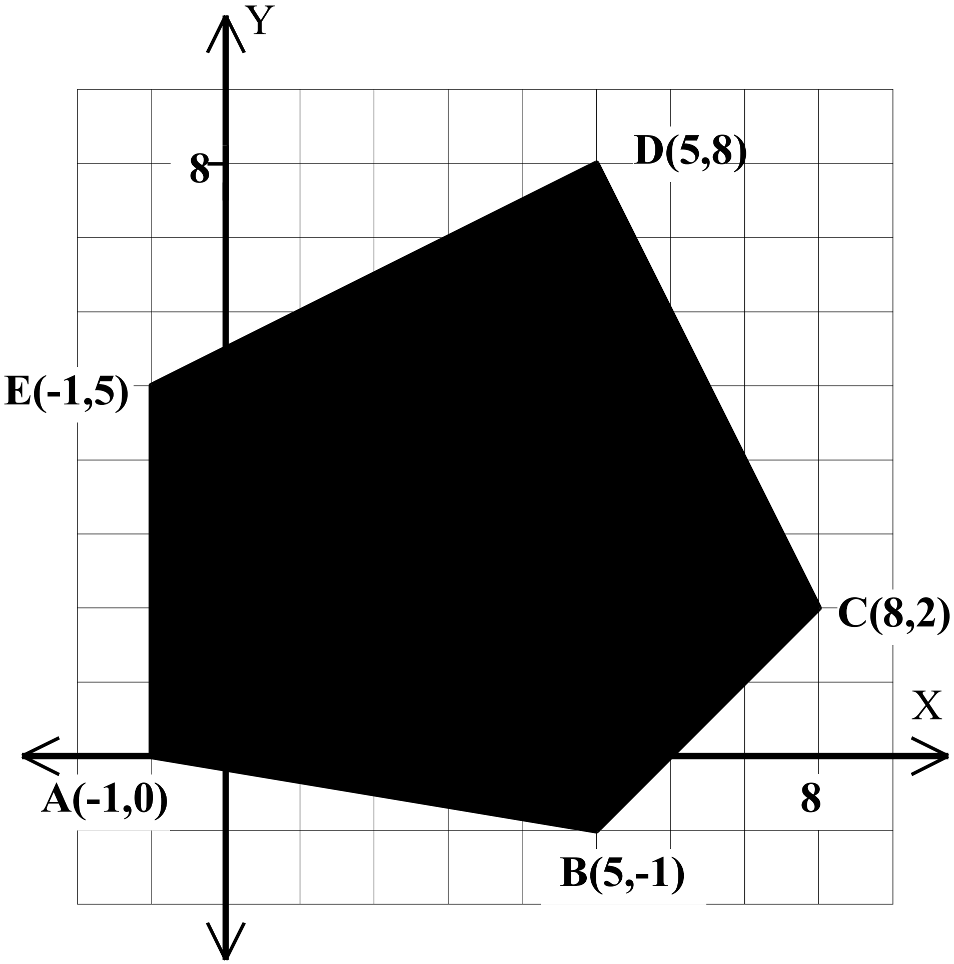
T_{min} = ______ at ________

At A(-1,0) $\Rightarrow$ T = -3 + 0 = **-3**

At B(5,-1) $\Rightarrow$ T = 15 + -5 = **10**

At C(8,2) $\Rightarrow$ T = 24

Algebra II   Class Worksheet #4   Unit 4



The **maximum** and the **minimum** values of T will occur at a vertex of the region.

1. $T = 3x + 5y$

T_{max} = ______ at ________

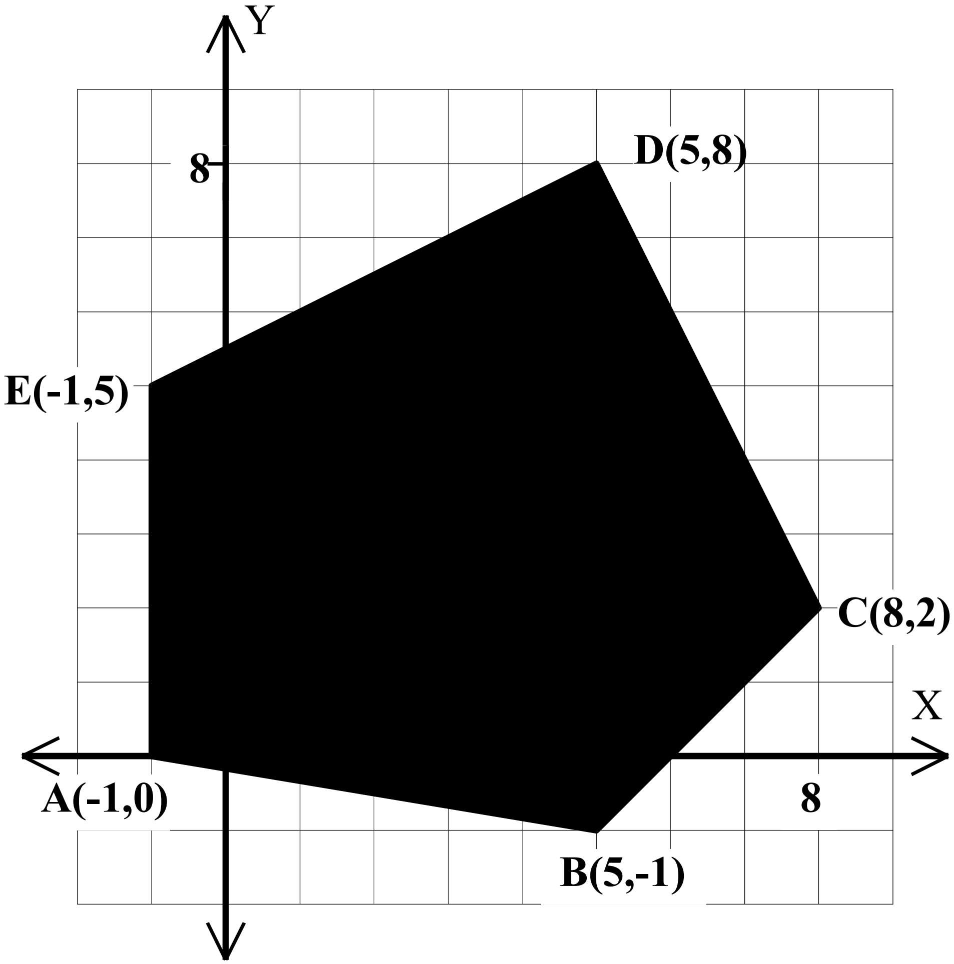
T_{min} = ______ at ________

At A(-1,0) $\Rightarrow$ T = -3 + 0 = **-3**

At B(5,-1) $\Rightarrow$ T = 15 + -5 = **10**

At C(8,2) $\Rightarrow$ T = 24 +

Algebra II Class Worksheet #4 Unit 4



The **maximum** and the **minimum** values of T will occur at a vertex of the region.

1. $T = 3x + 5y$

T_{max} = ______ at ________

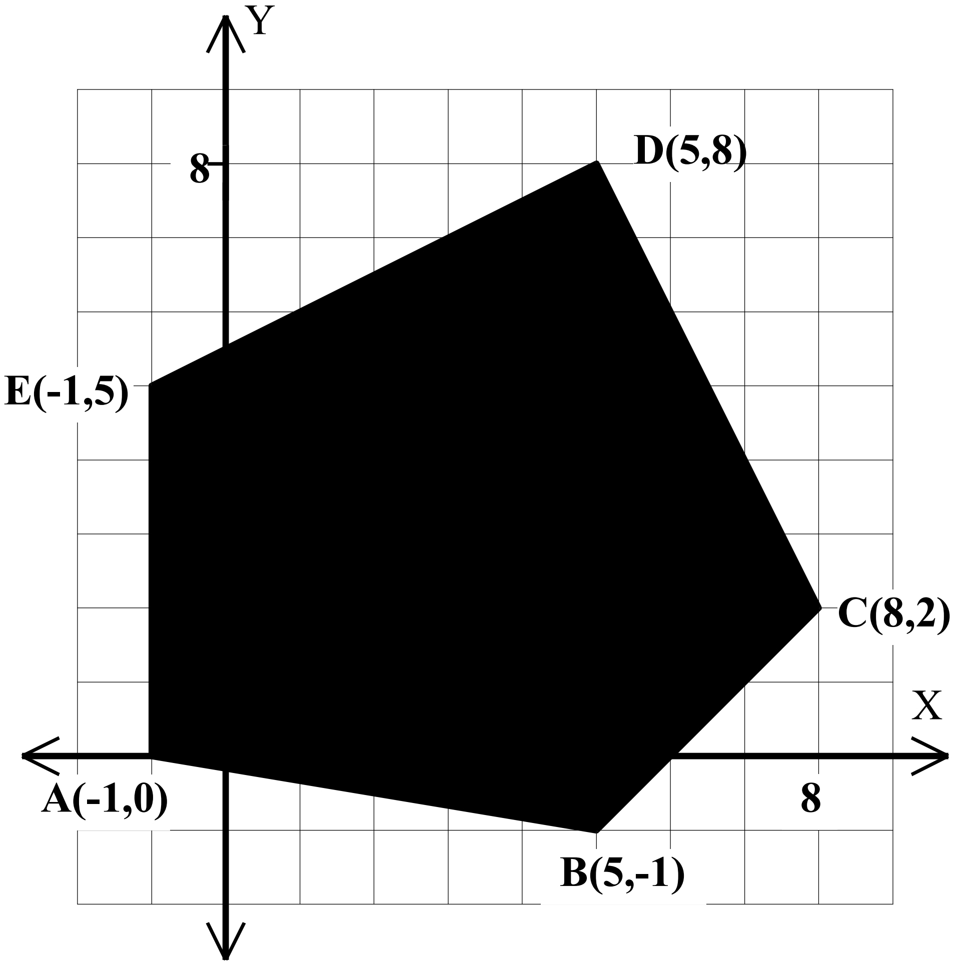
T_{min} = ______ at ________

At A(-1,0) $\Rightarrow$ T = -3 + 0 = **-3**

At B(5,-1) $\Rightarrow$ T = 15 + -5 = **10**

At C(8,2) $\Rightarrow$ T = 24 + 10

Algebra II Class Worksheet #4 Unit 4



The **maximum** and the **minimum** values of T will occur at a vertex of the region.

1. $T = 3x + 5y$

T_{max} = ______ at ________

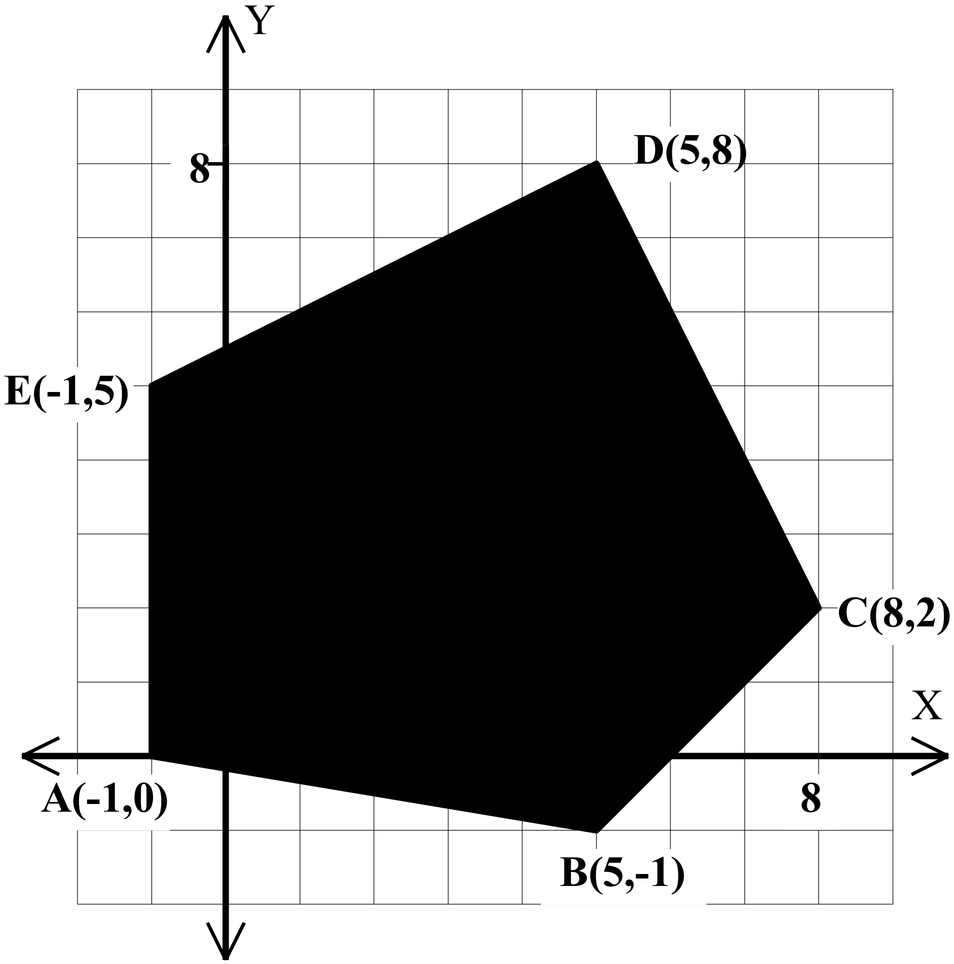
T_{min} = ______ at ________

At A(-1,0) ⇨ T = -3 + 0 = **-3**

At B(5,-1) ⇨ T = 15 + -5 = **10**

At C(8,2) ⇨ T = 24 + 10 =

Algebra II Class Worksheet #4 Unit 4



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T_{max} = ______ at ________

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At A(-1,0) $\Rightarrow$ T = -3 + 0 = **-3**

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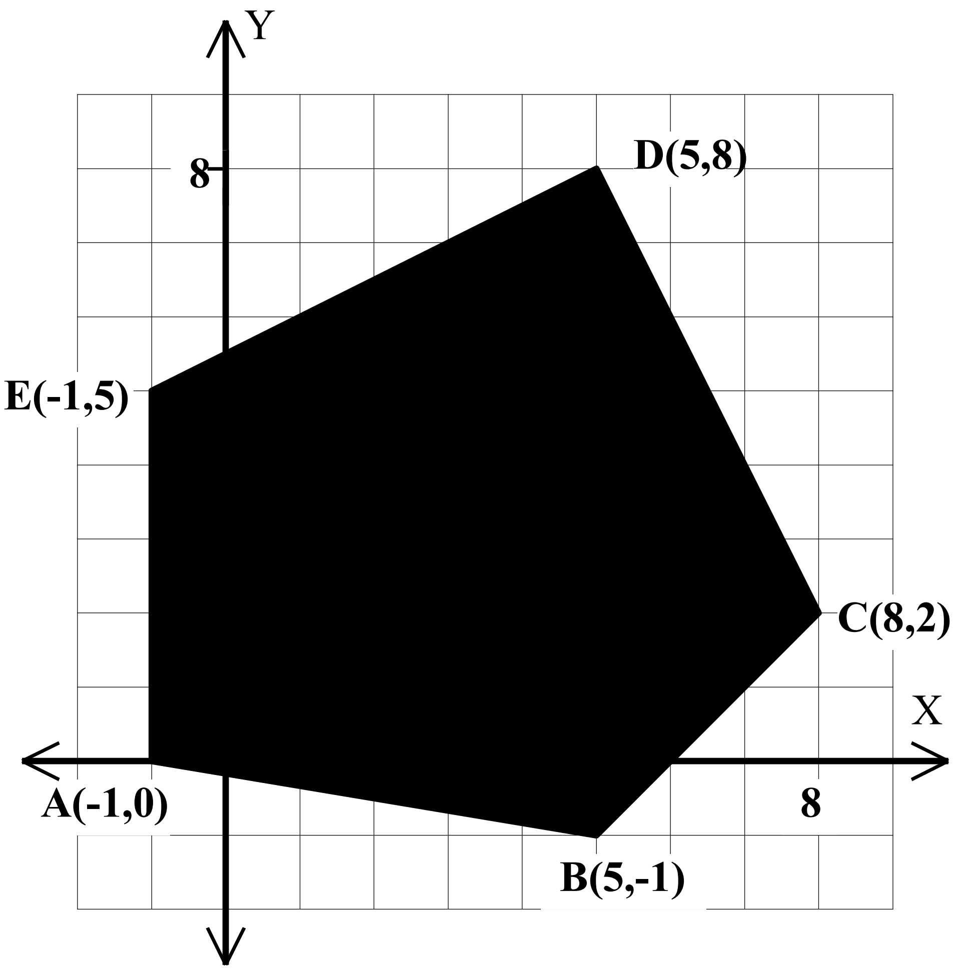

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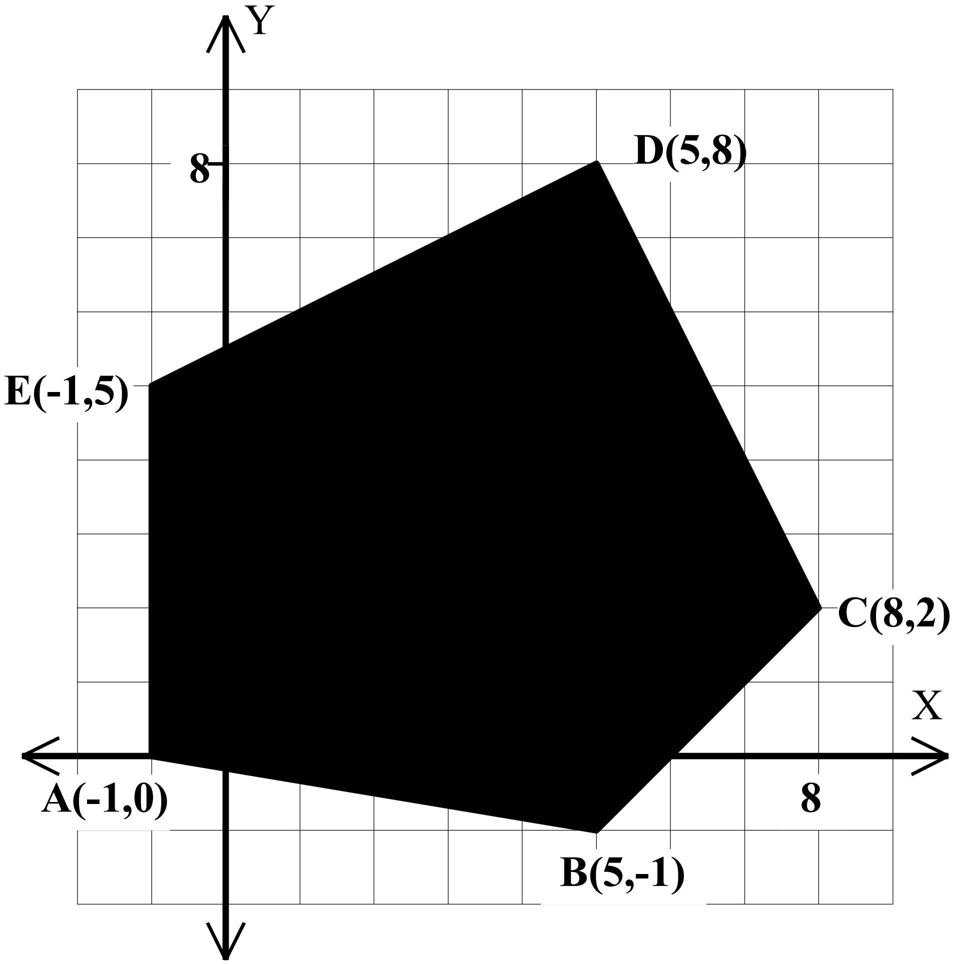

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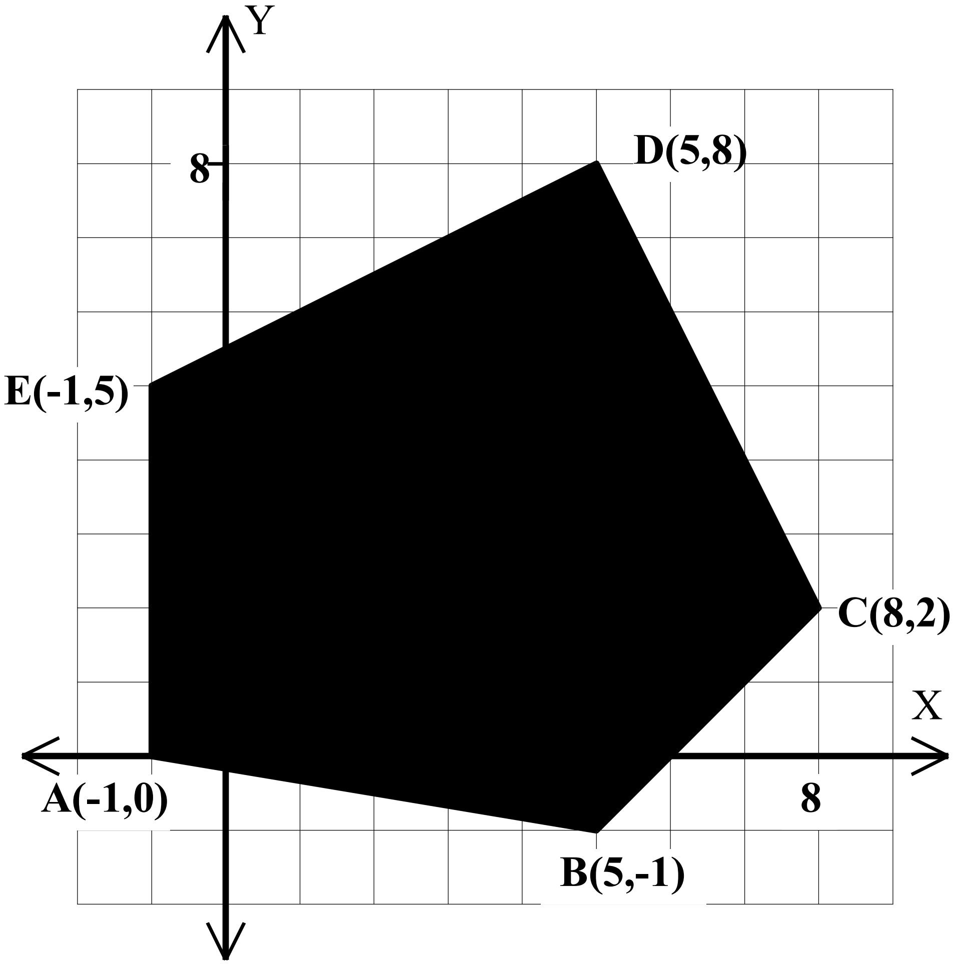

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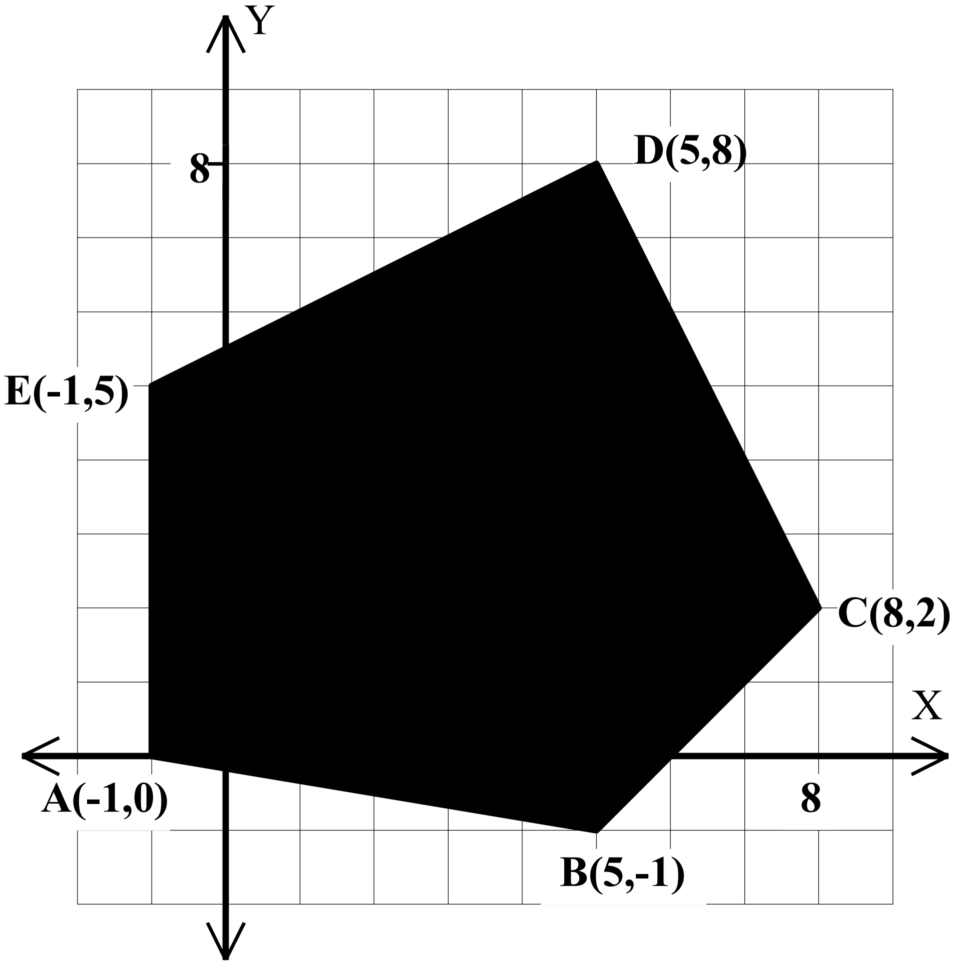

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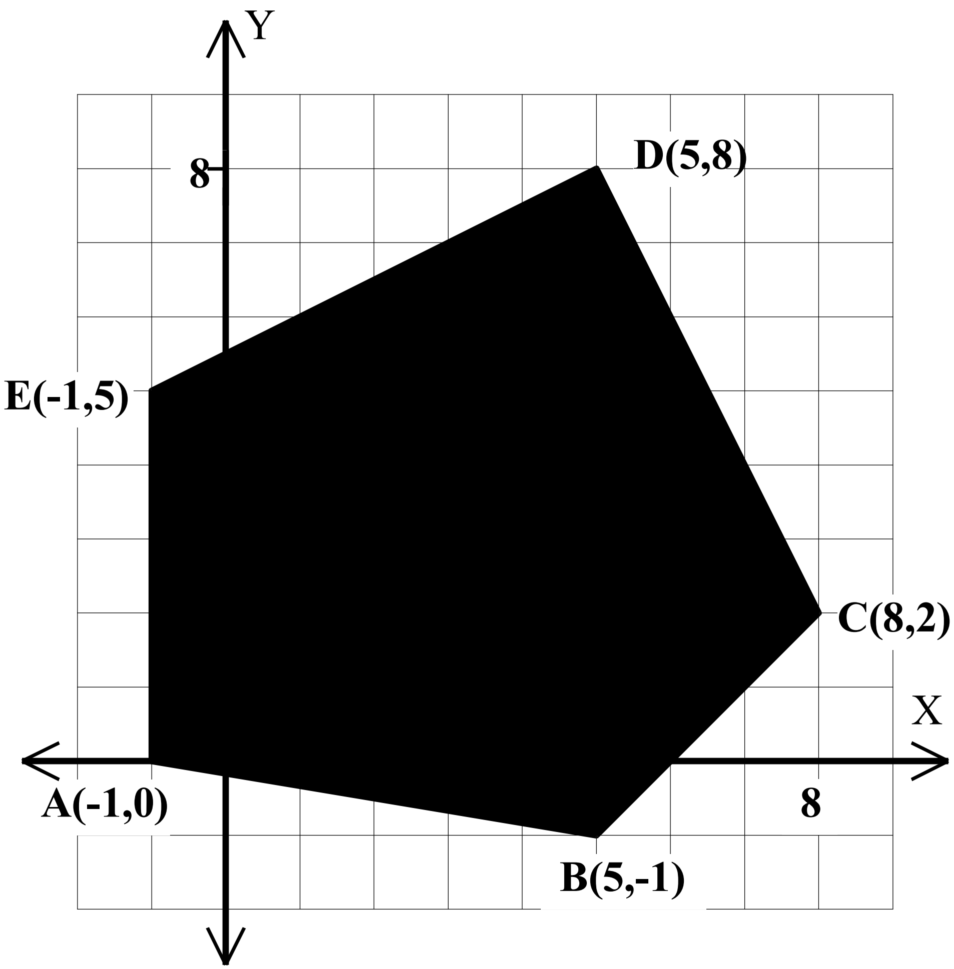

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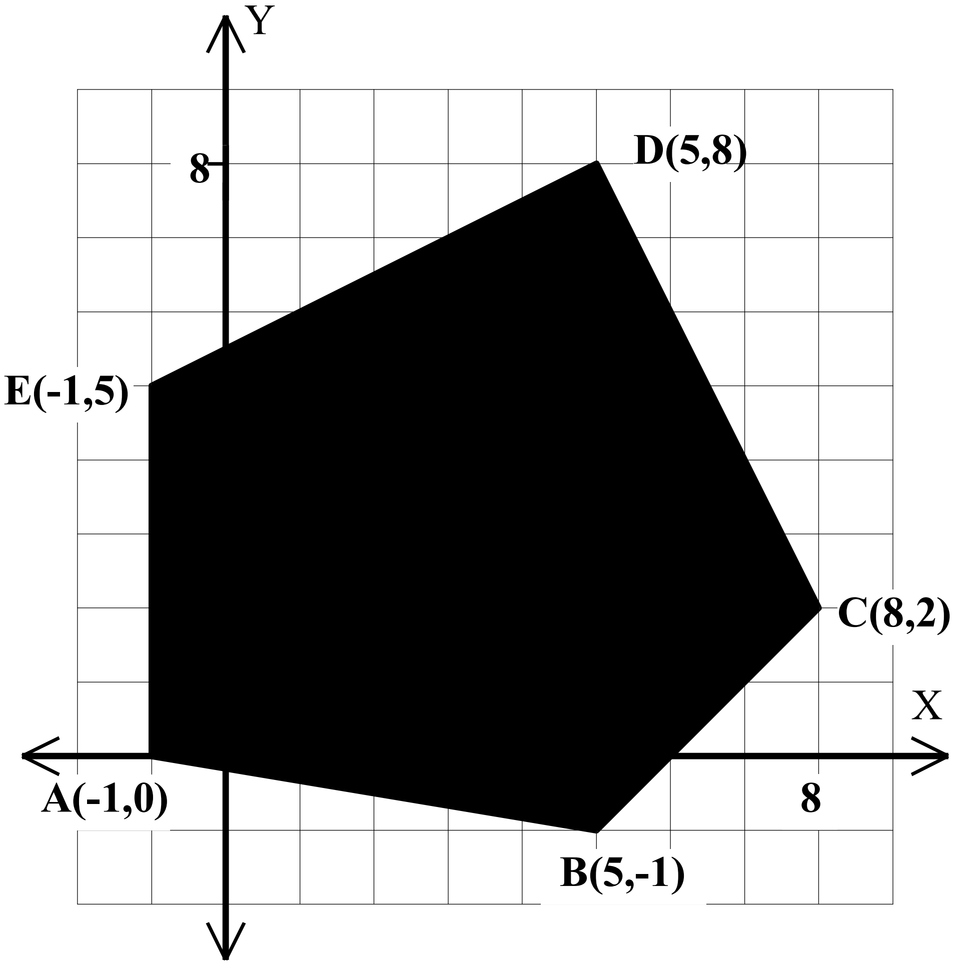

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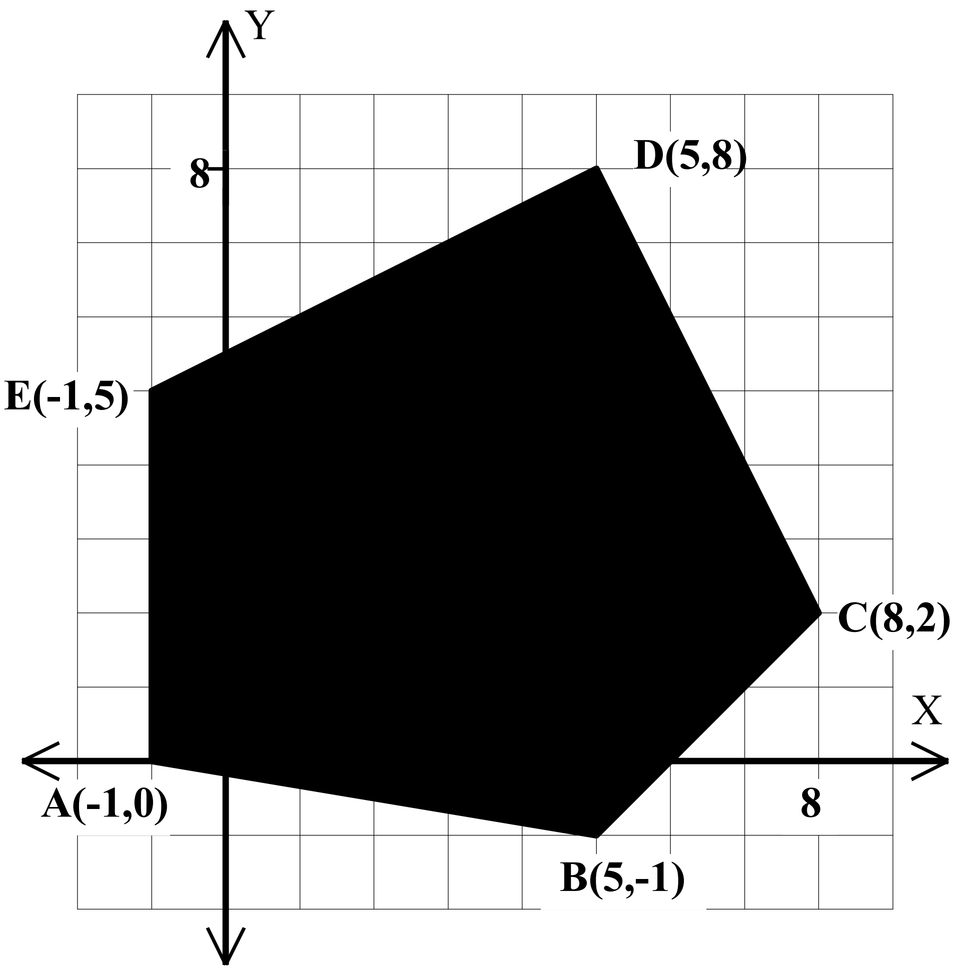

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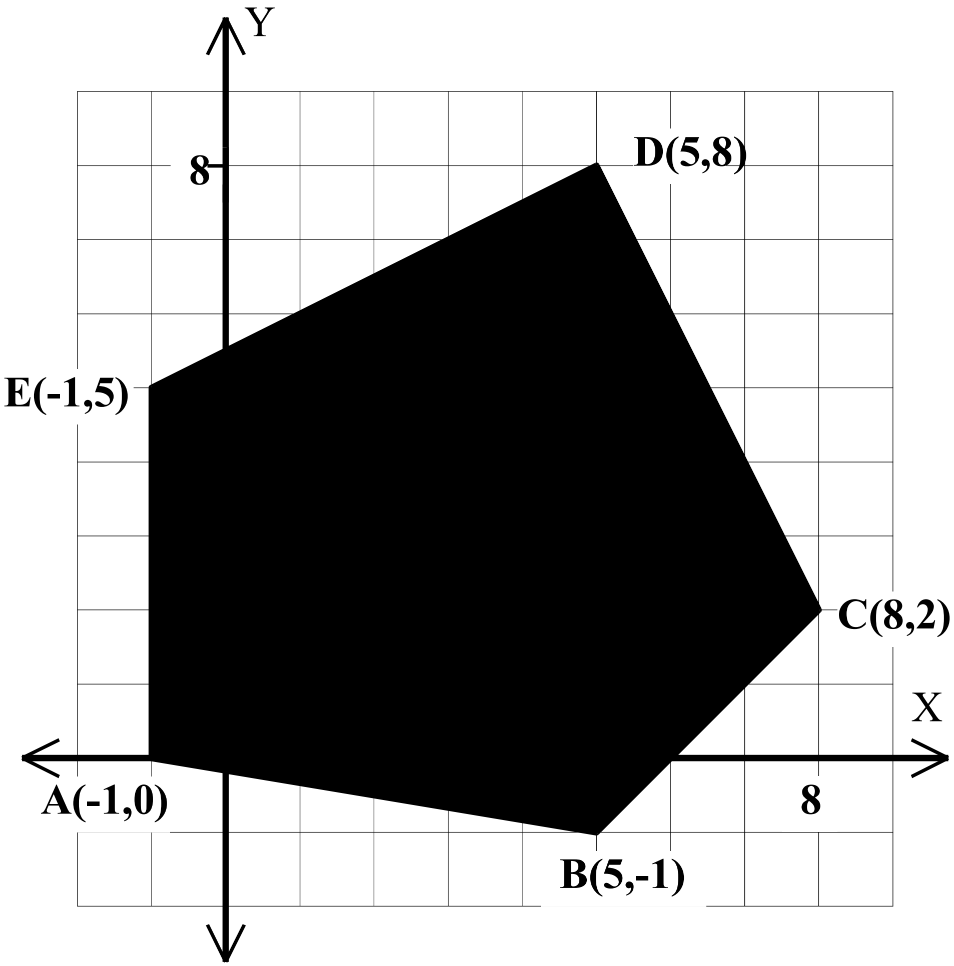

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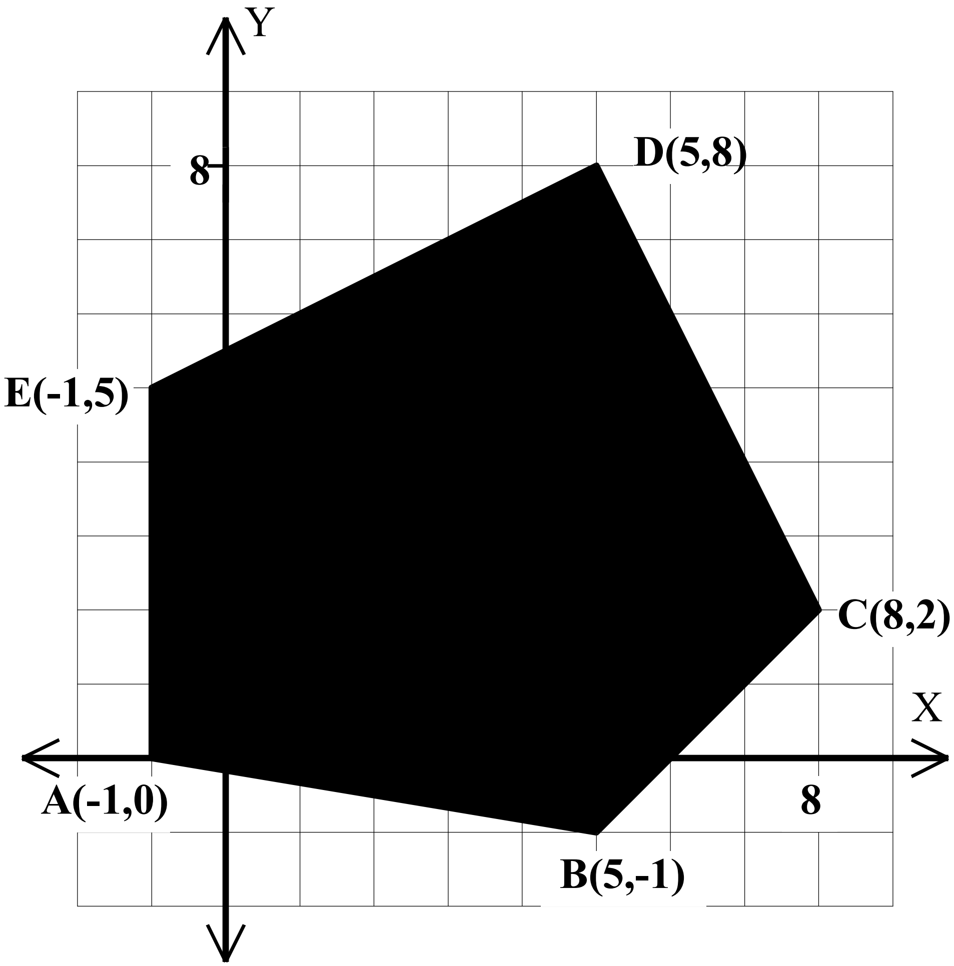

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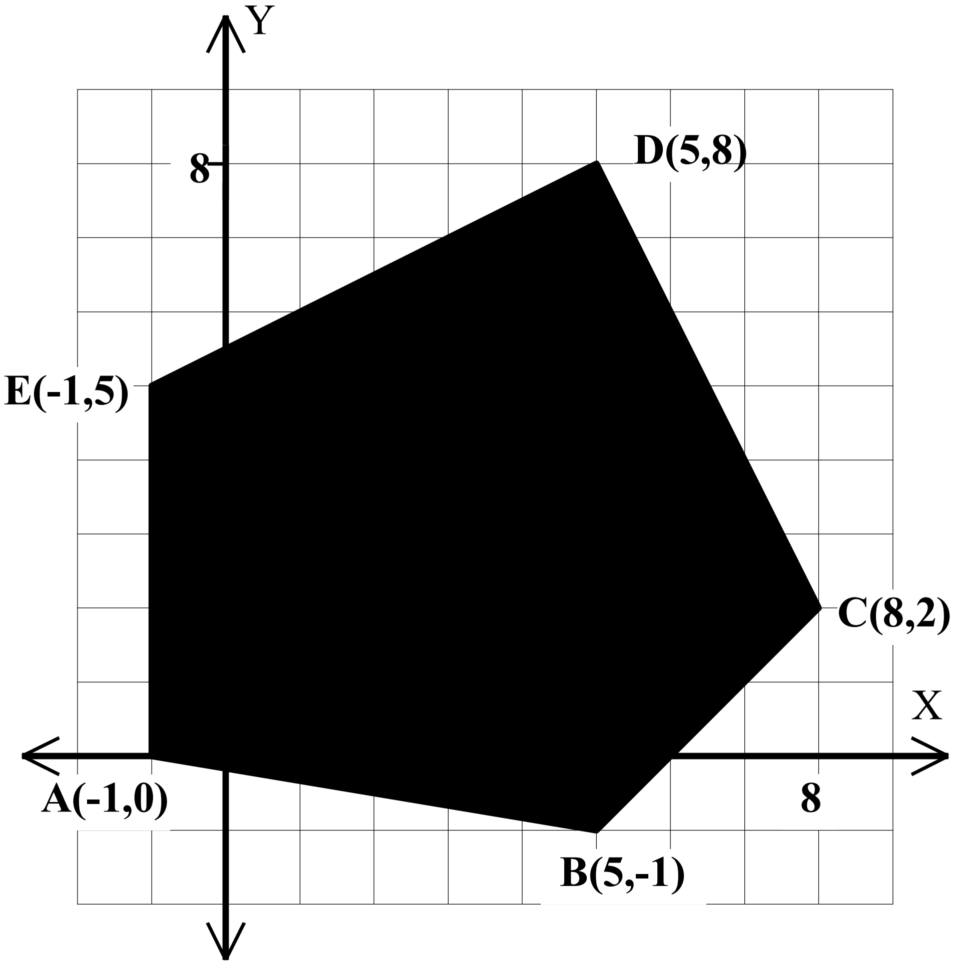

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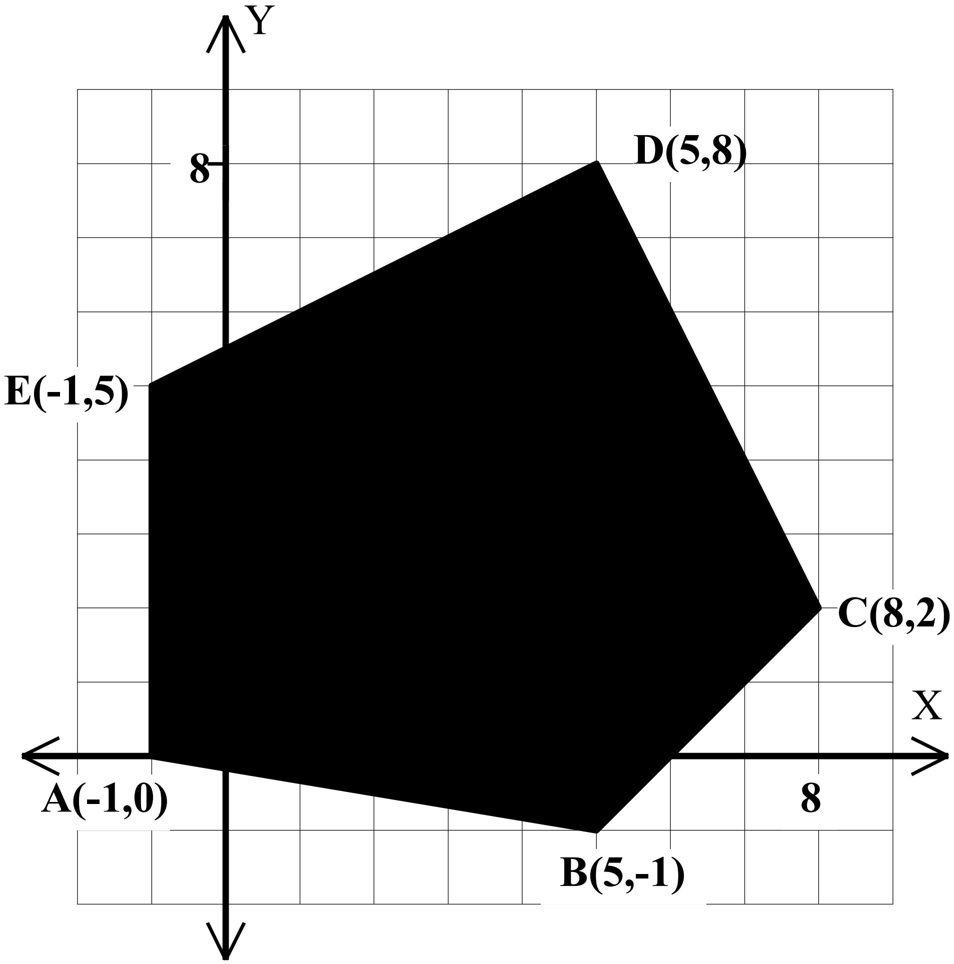

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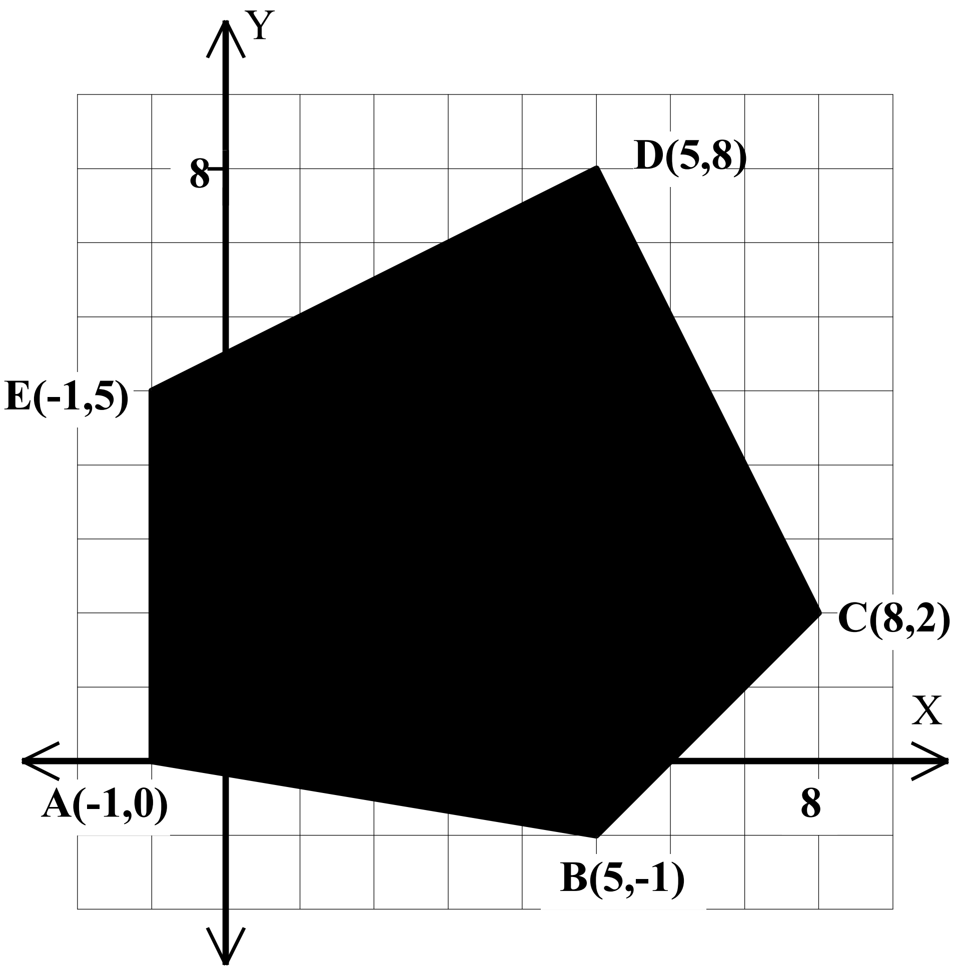

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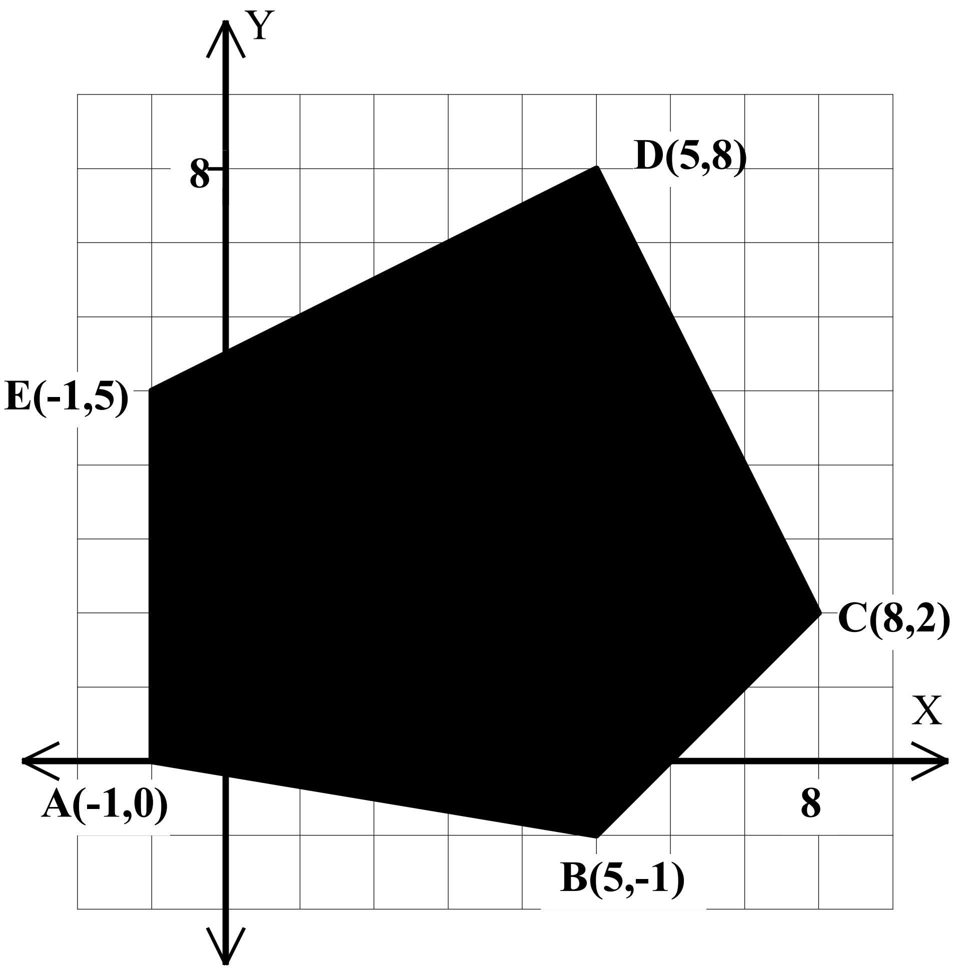

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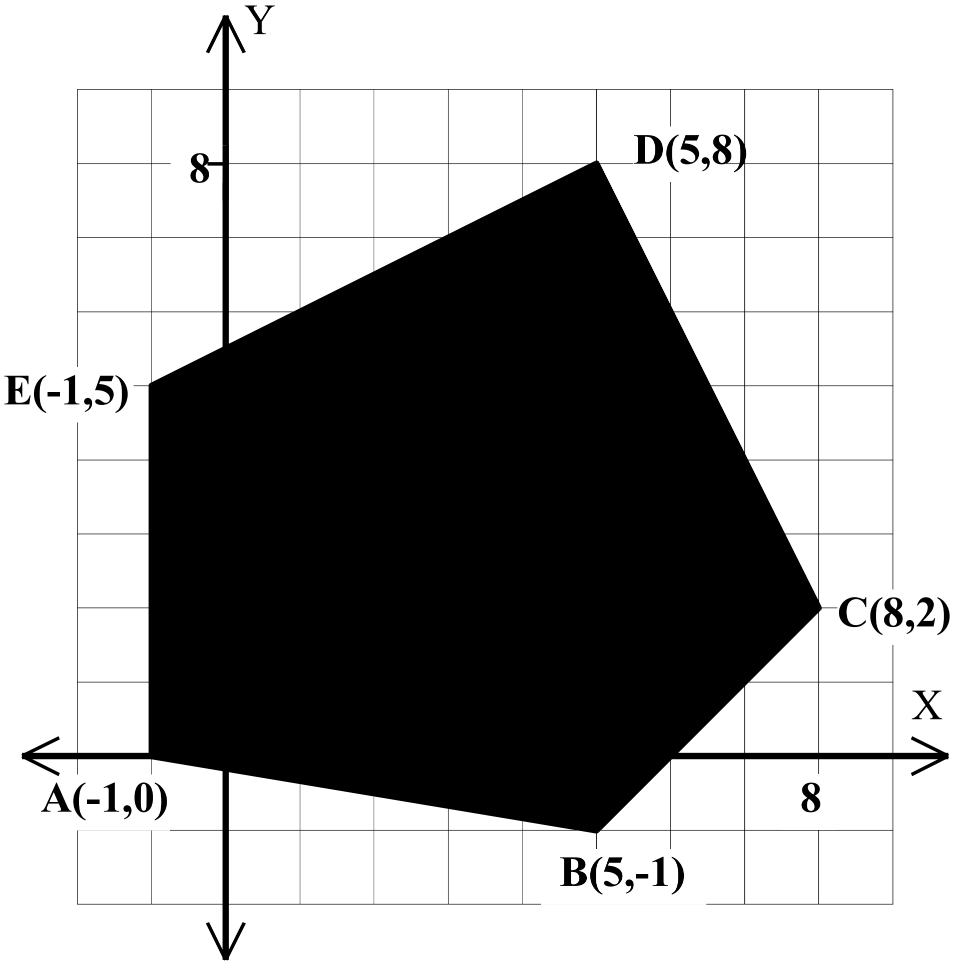

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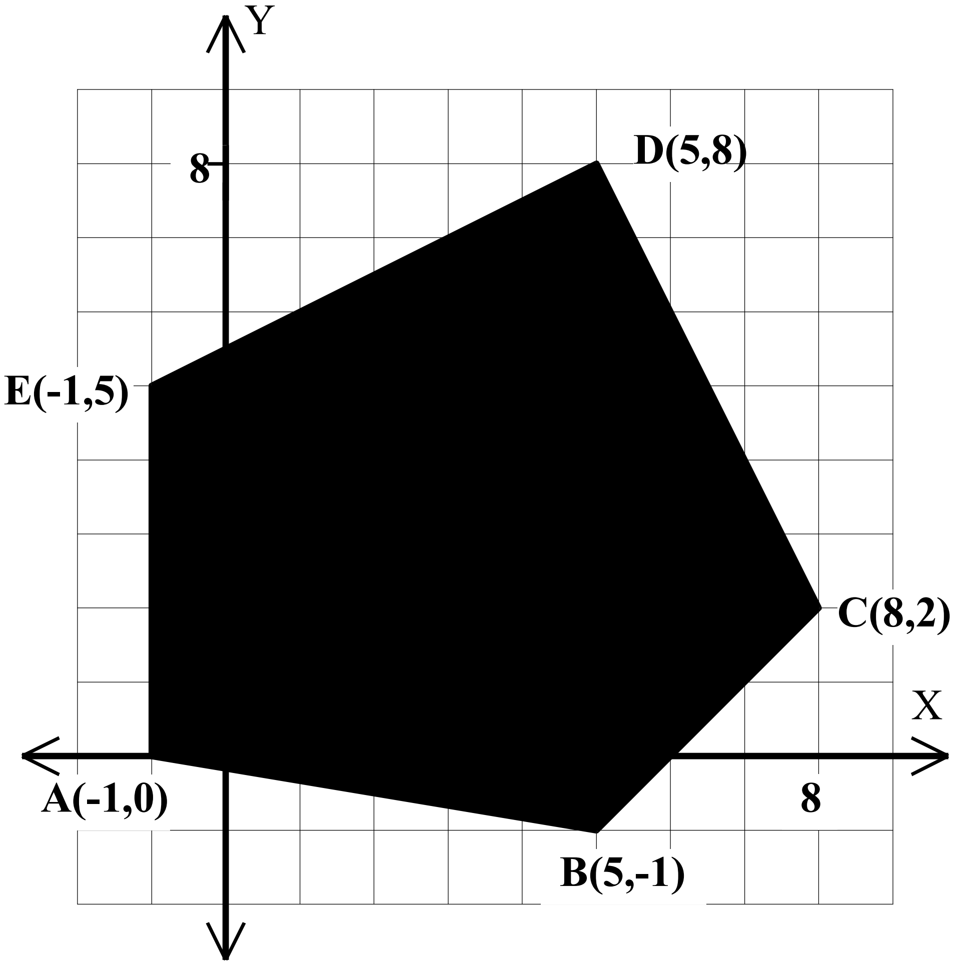

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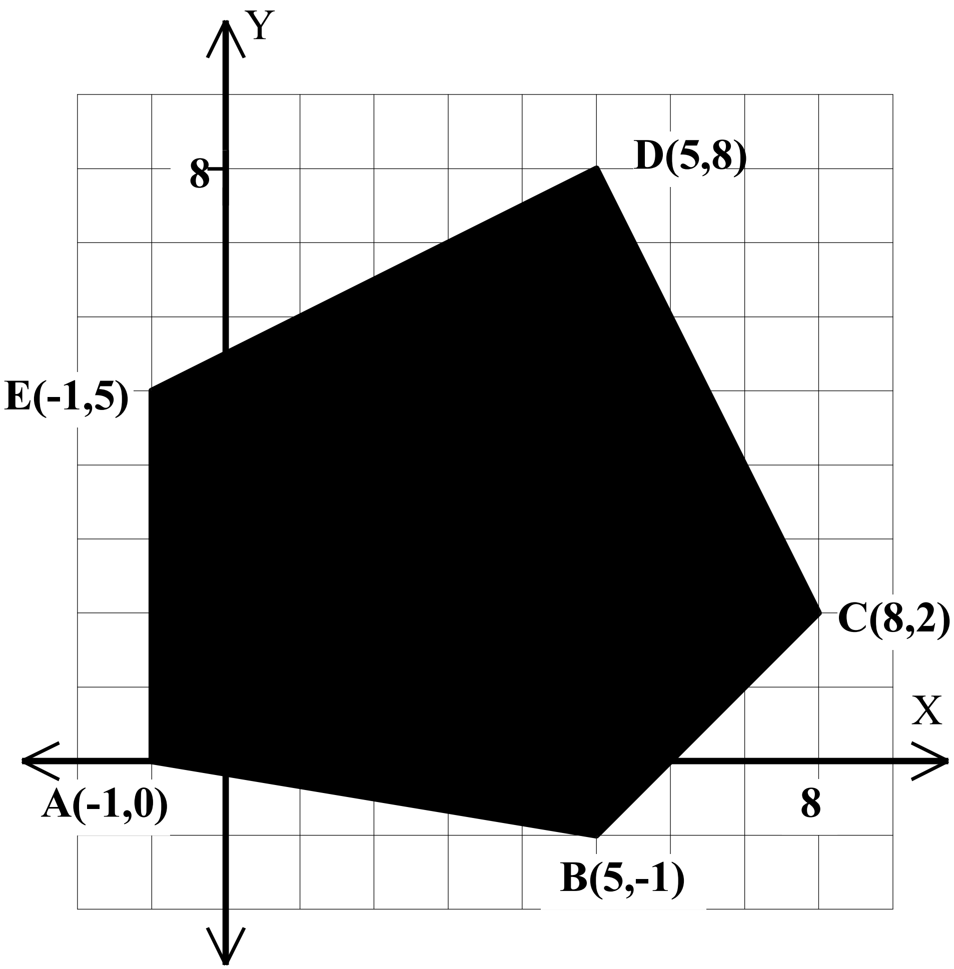

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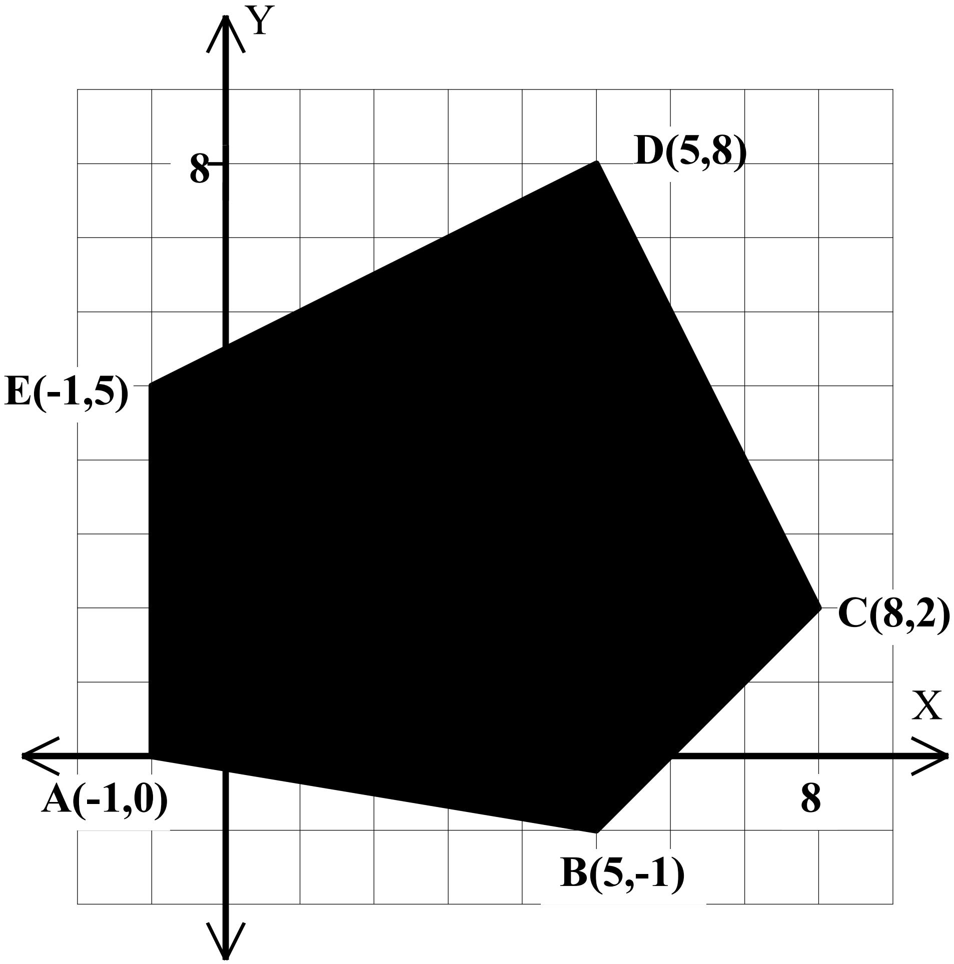

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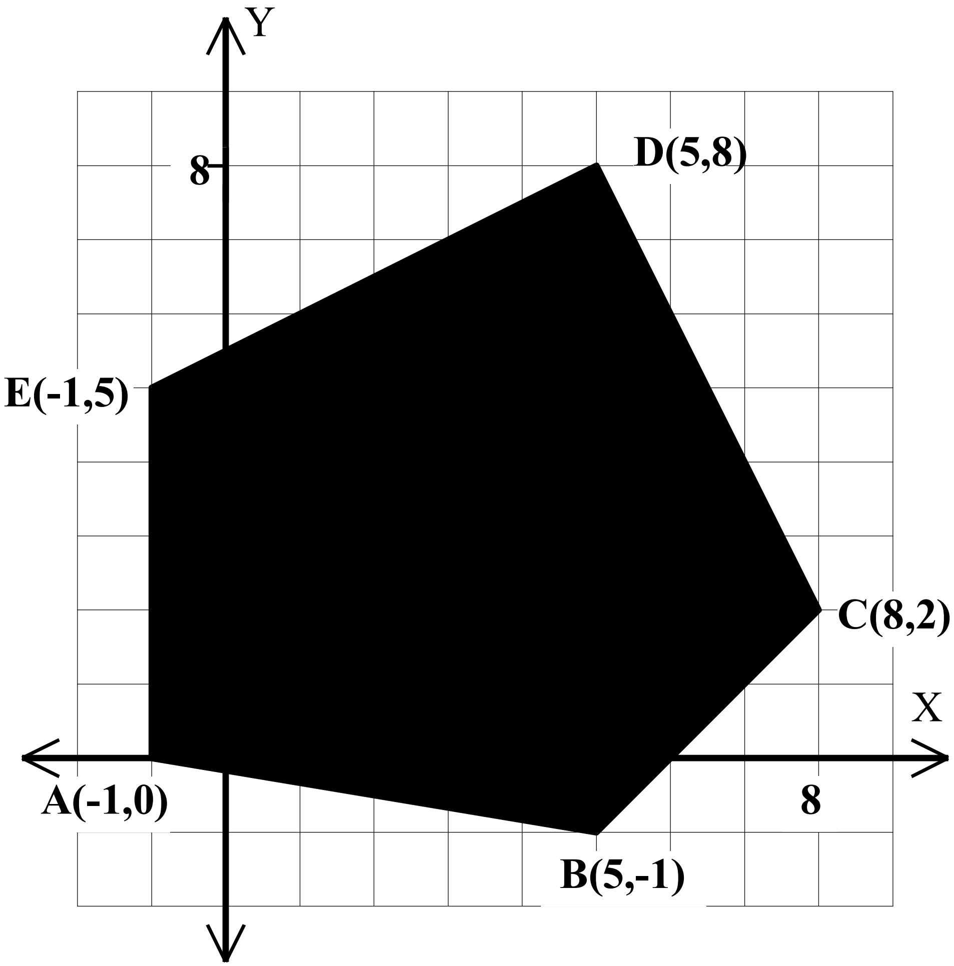

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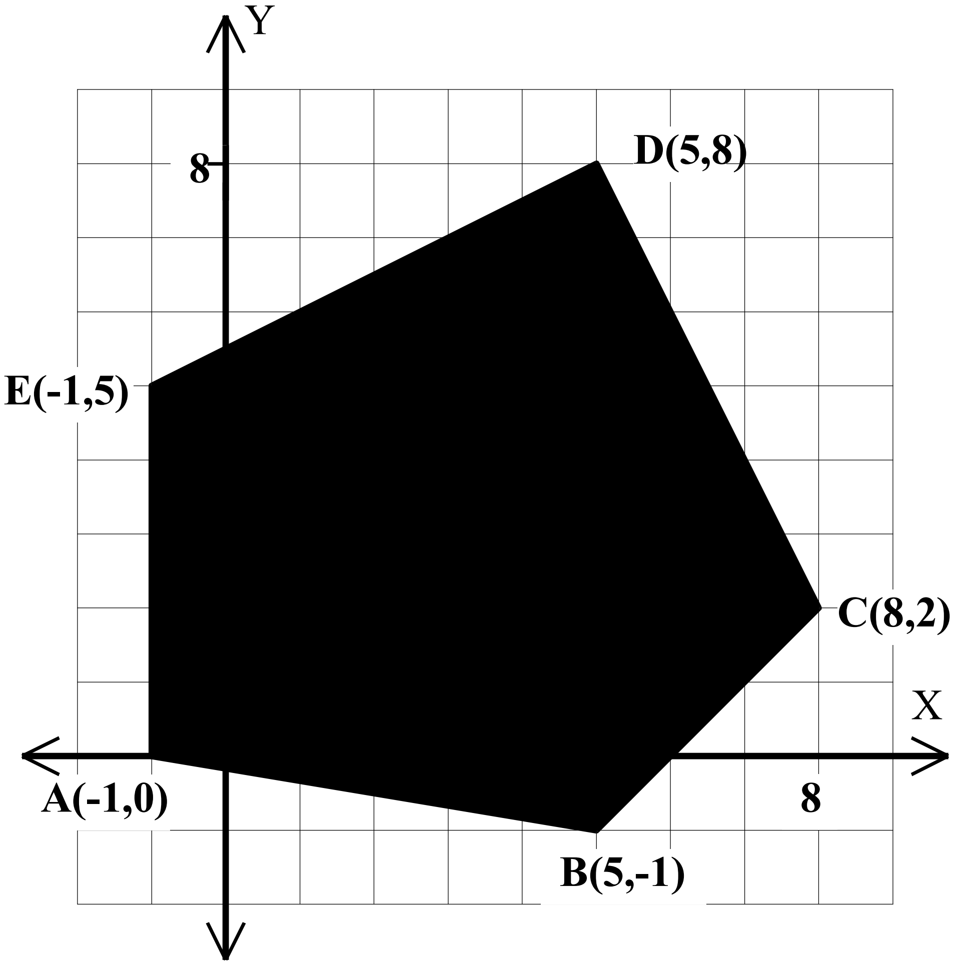

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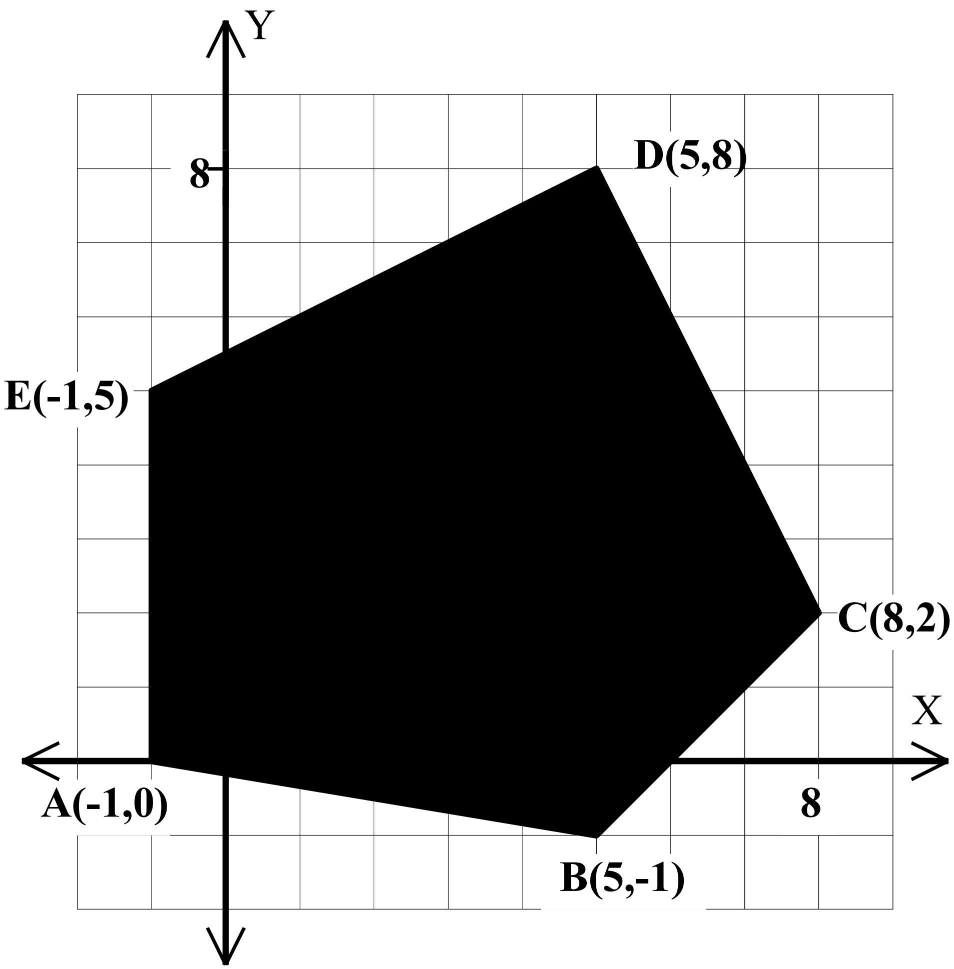

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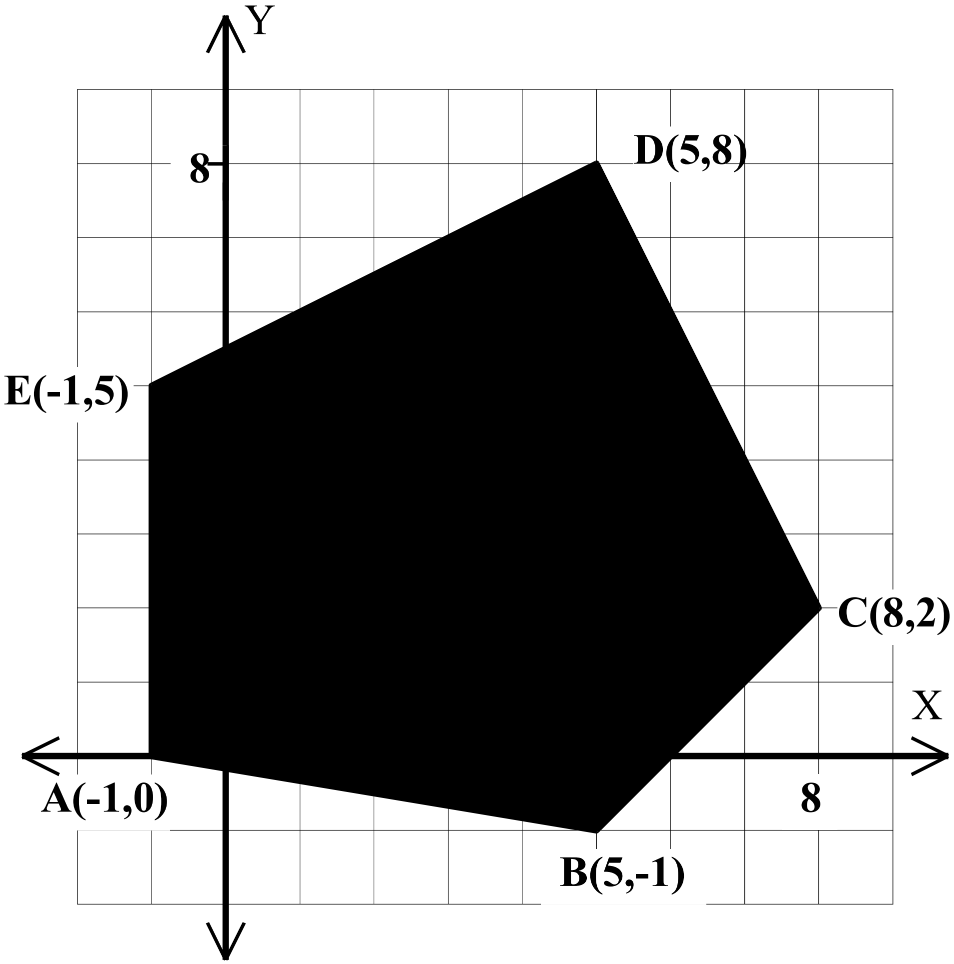

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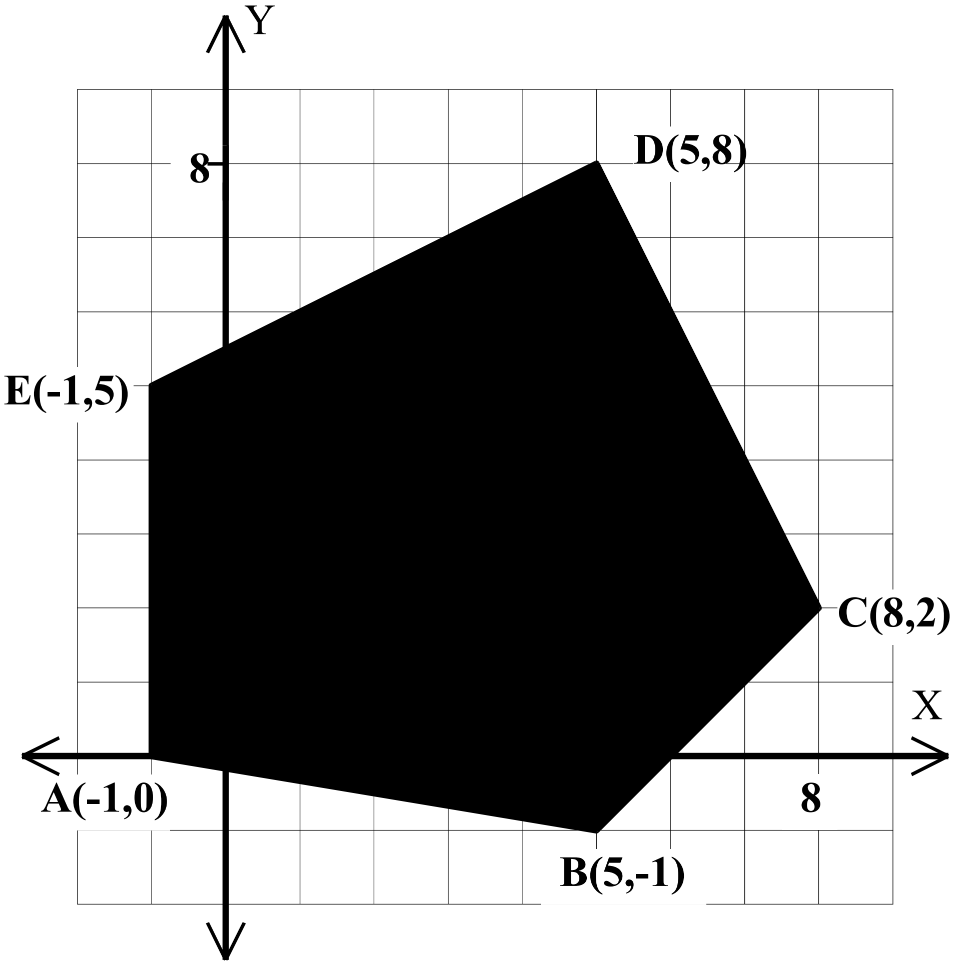

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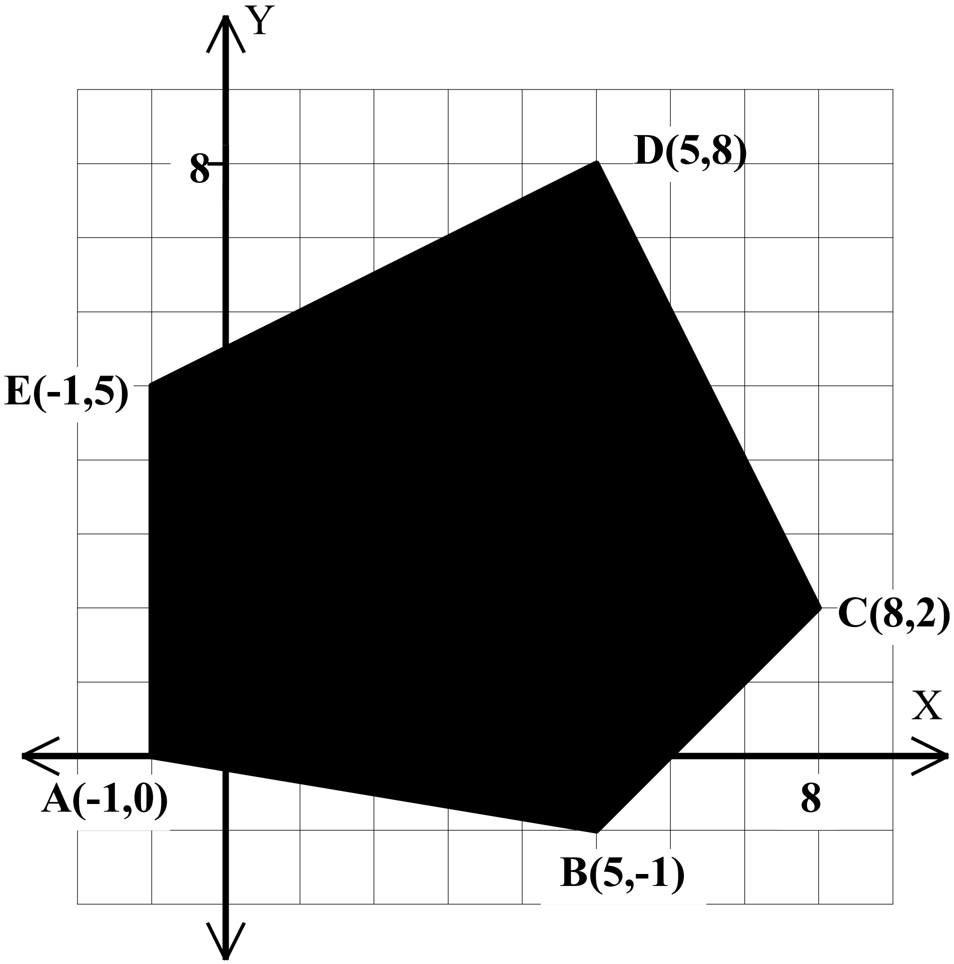

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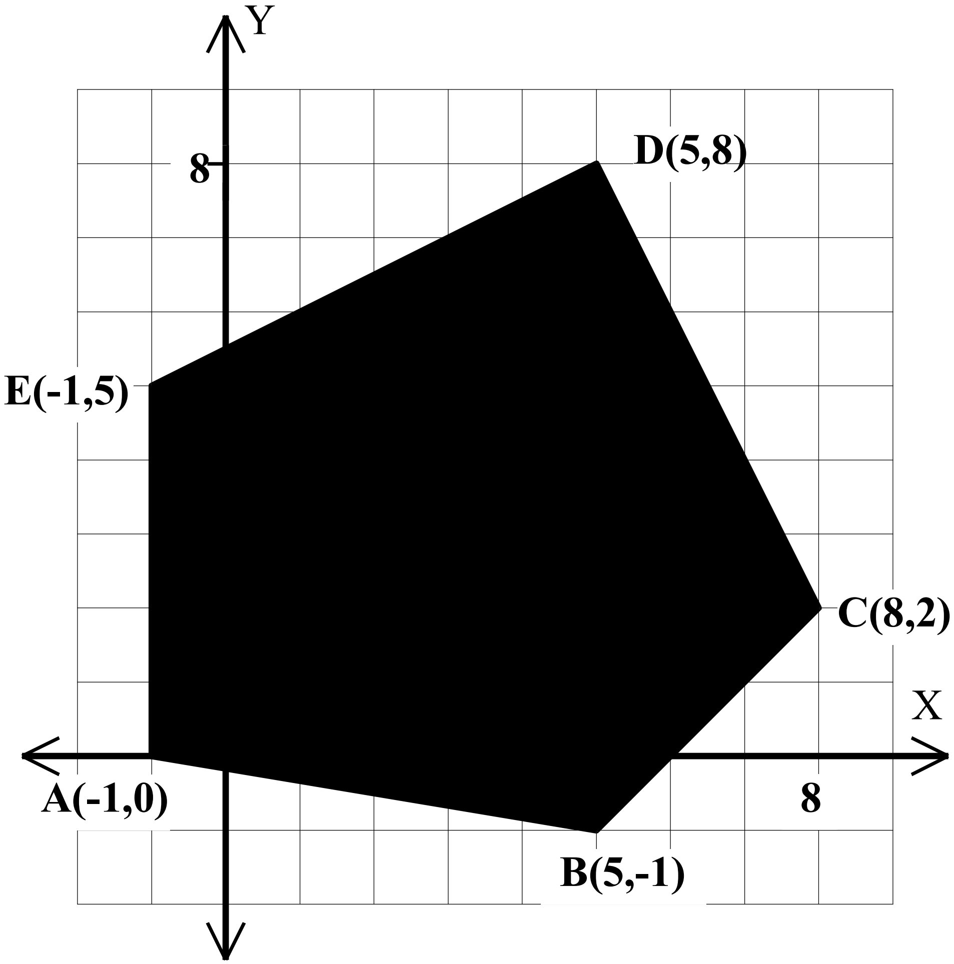

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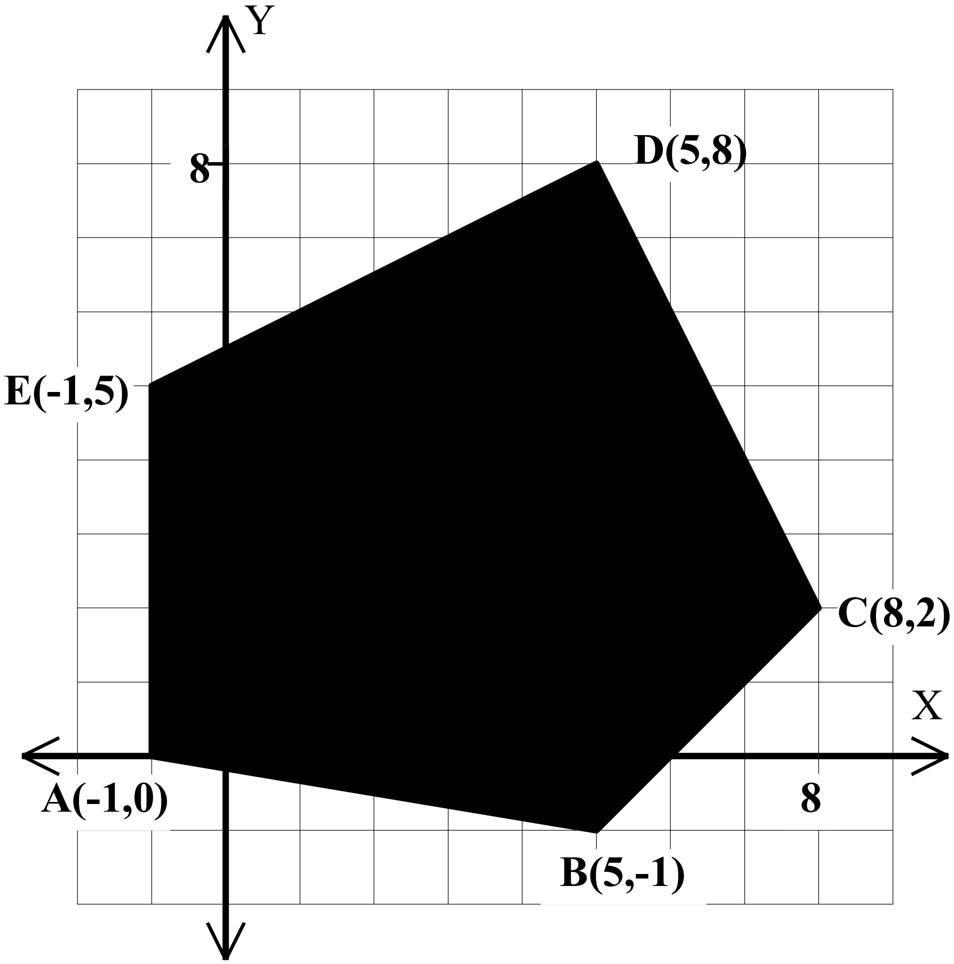

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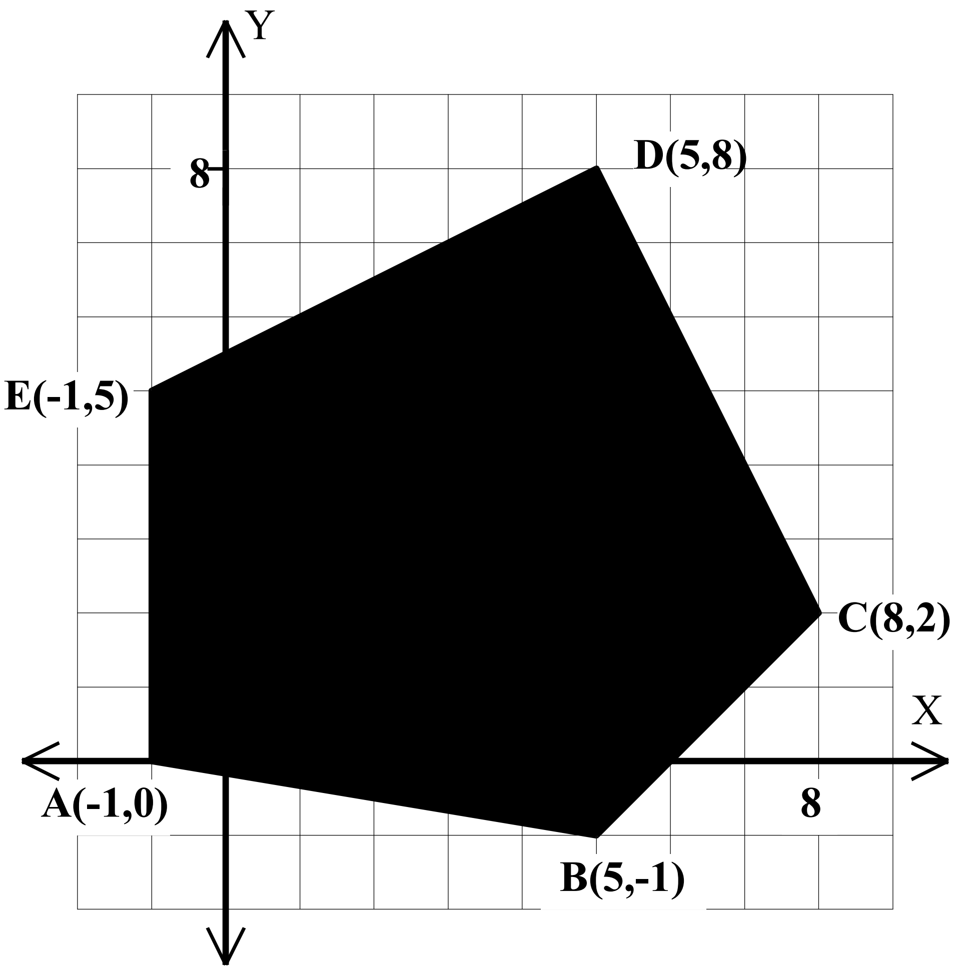

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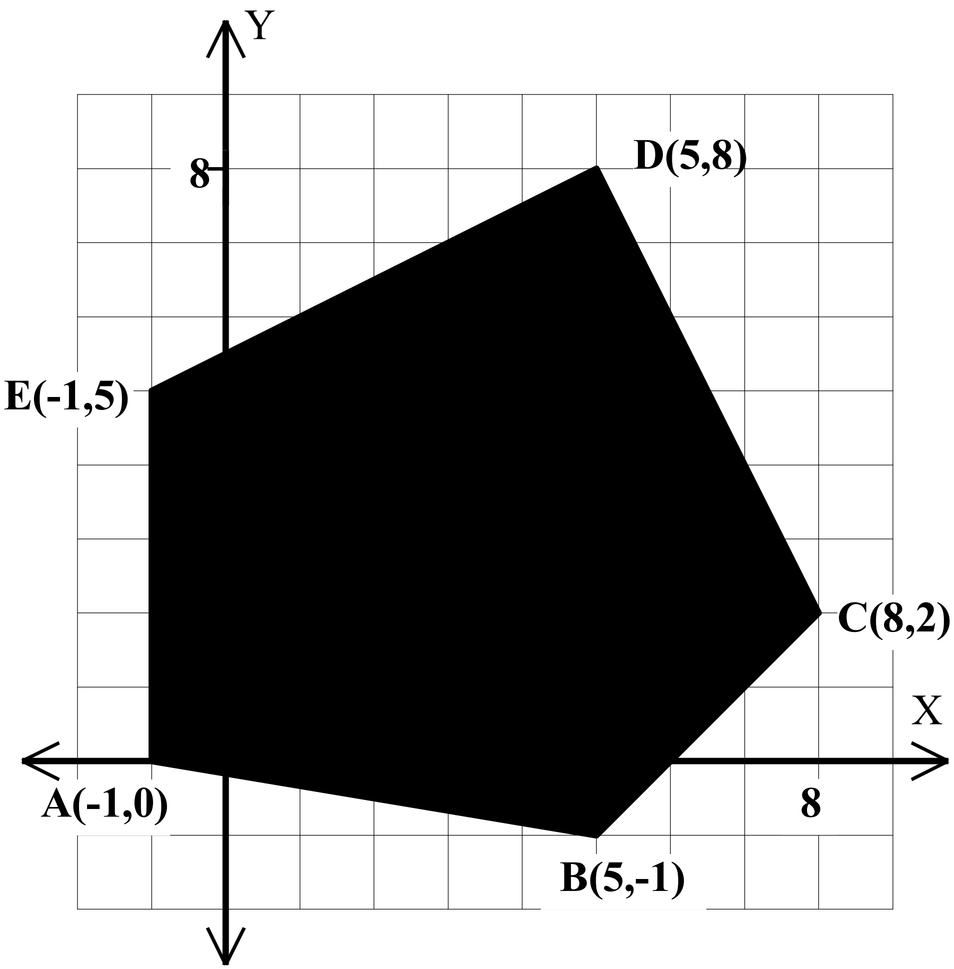

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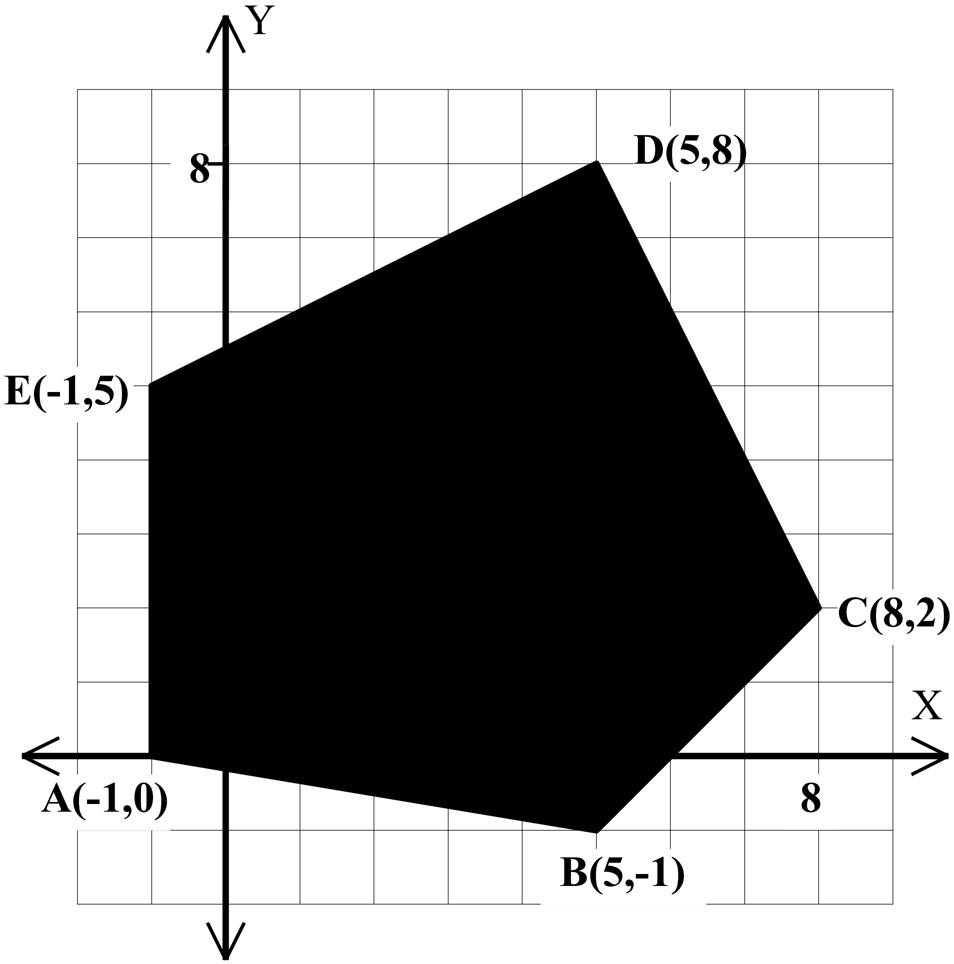

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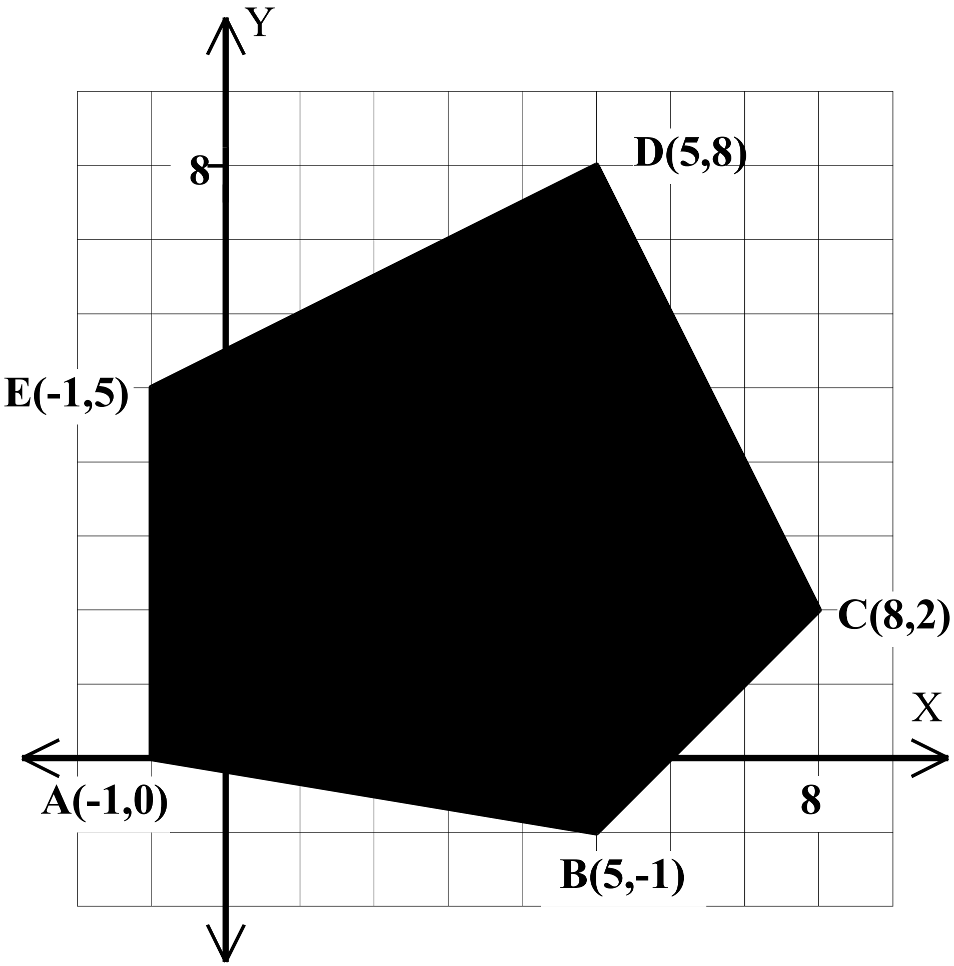

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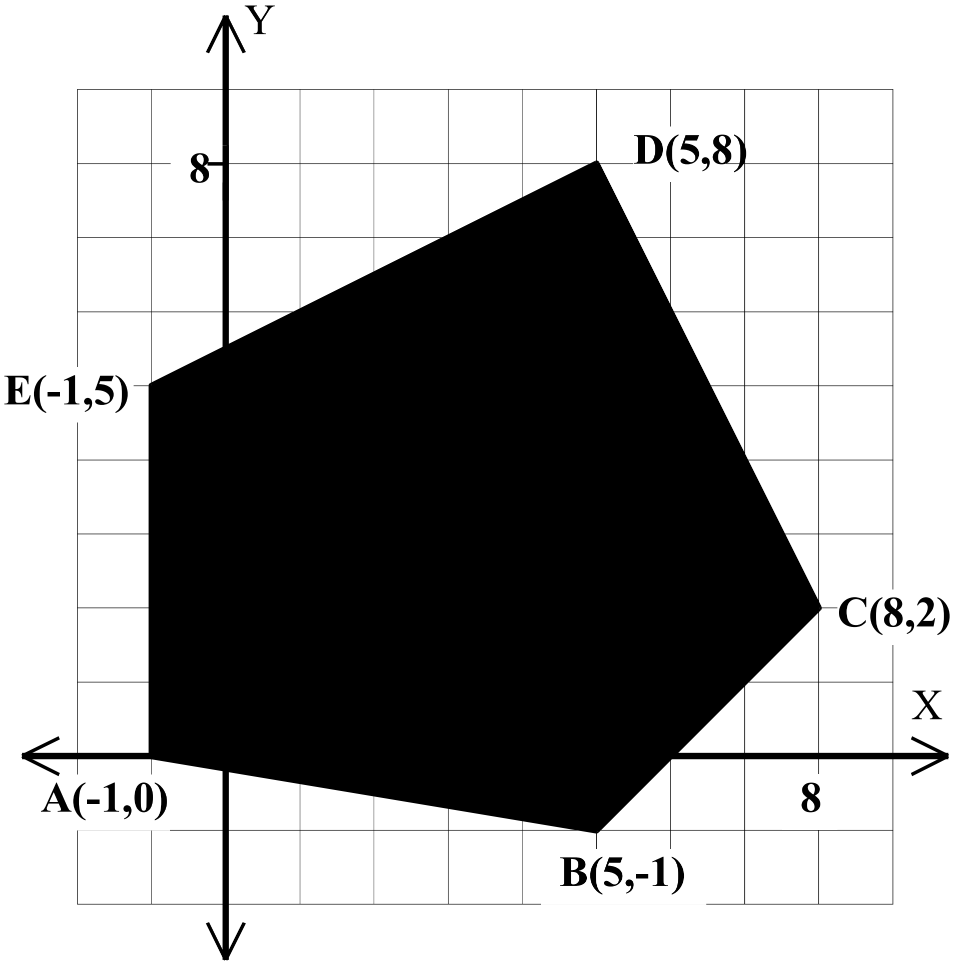

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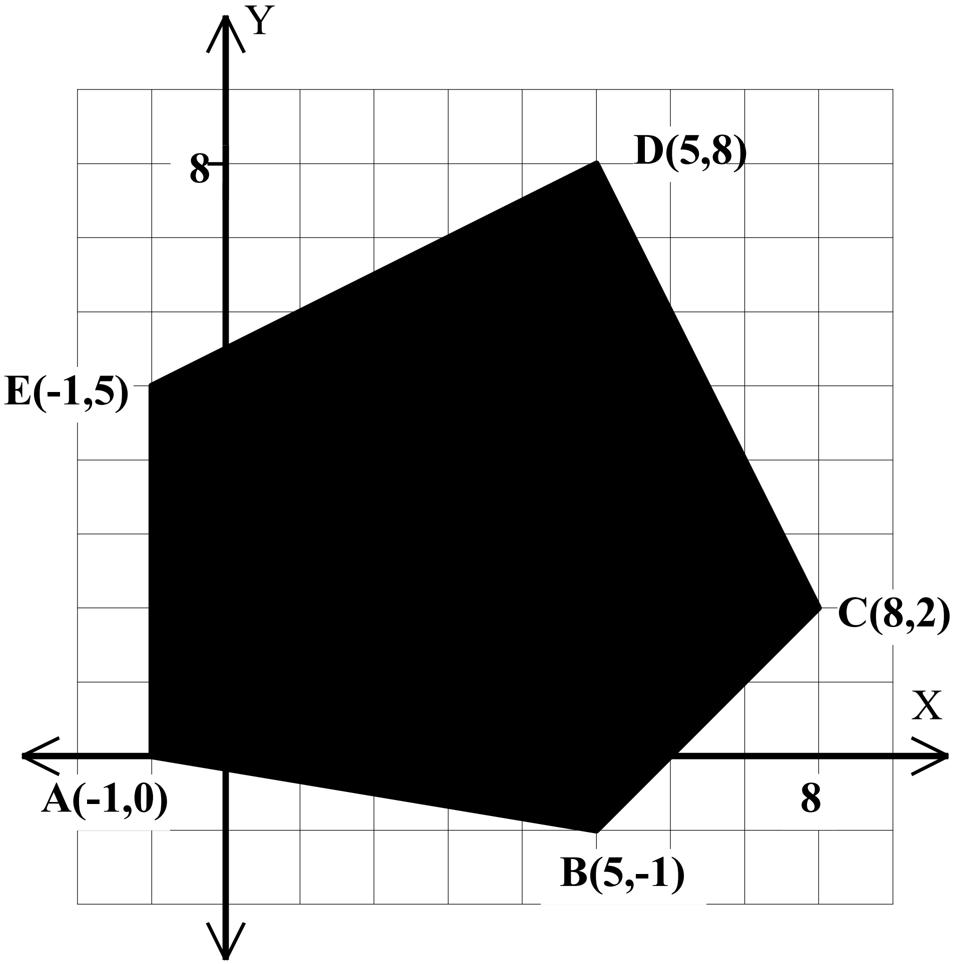
Algebra II Class Worksheet #4 Unit 4



The **maximum** and the **minimum** values of T will occur at a vertex of the region.

2. $T = 6x - 2y$

T_{max} = ______ at ________

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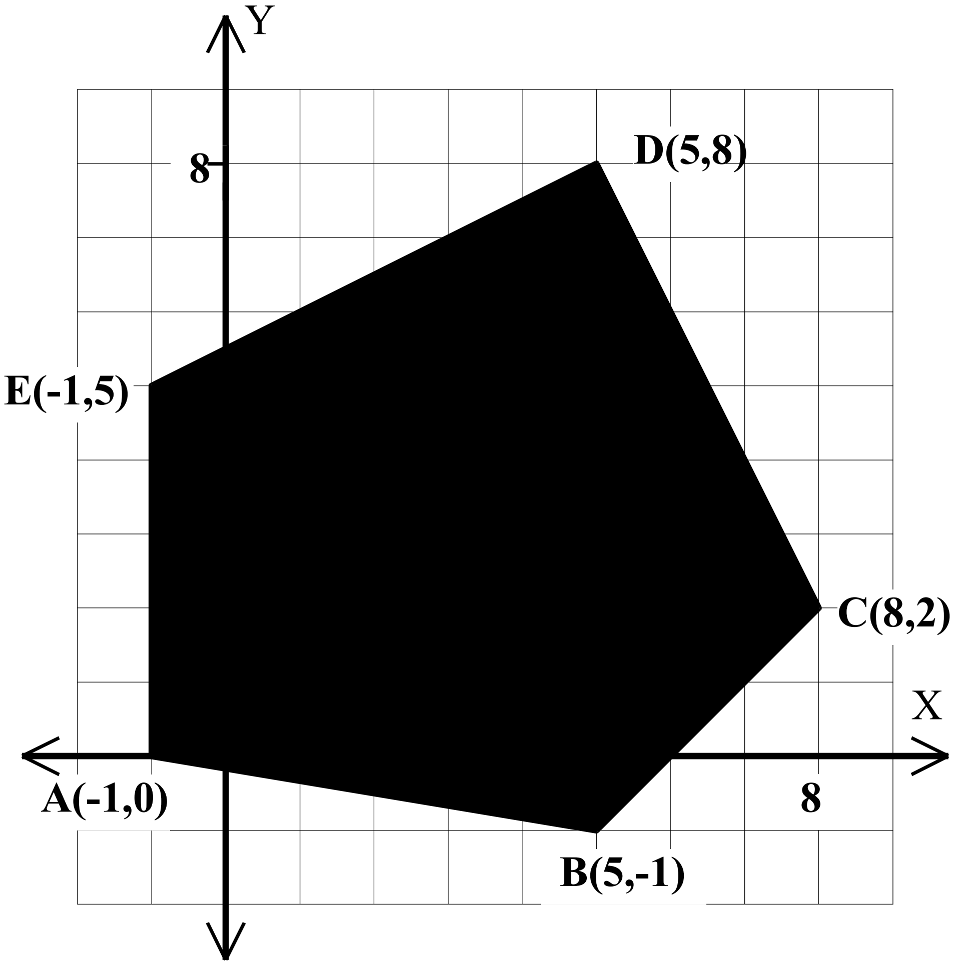
Algebra II Class Worksheet #4 Unit 4



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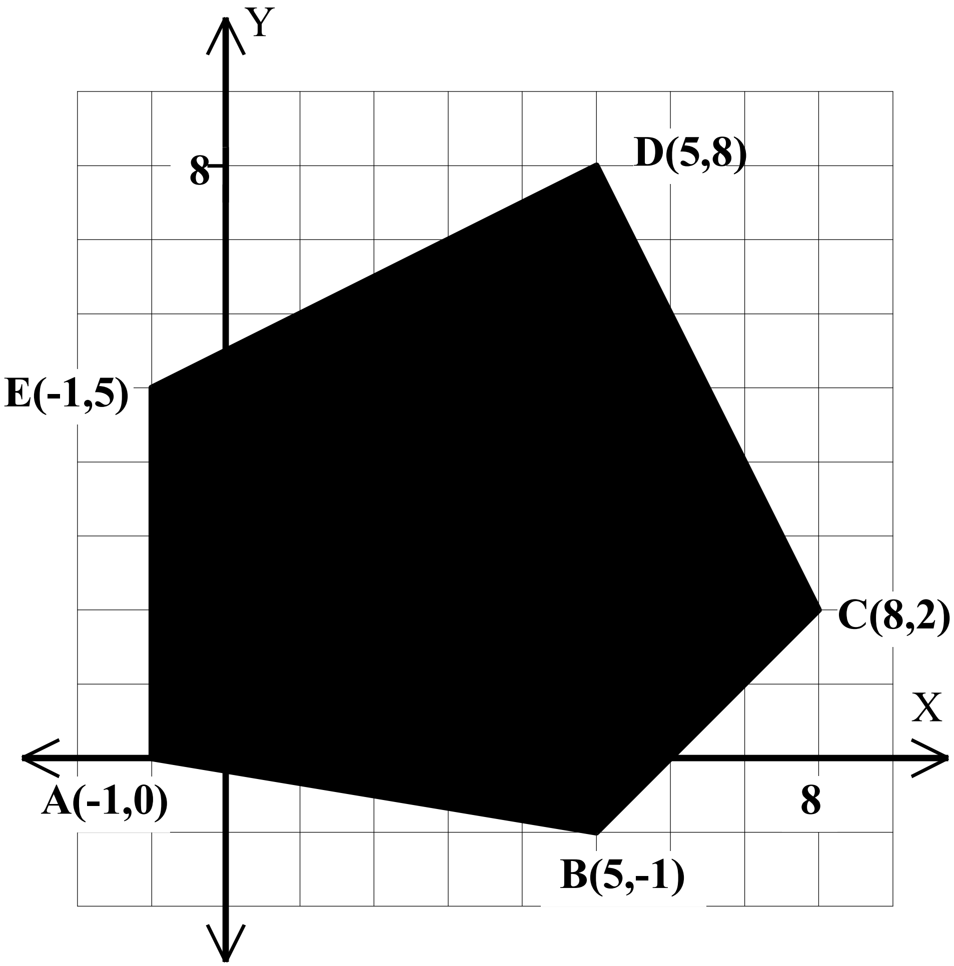
Algebra II Class Worksheet #4 Unit 4



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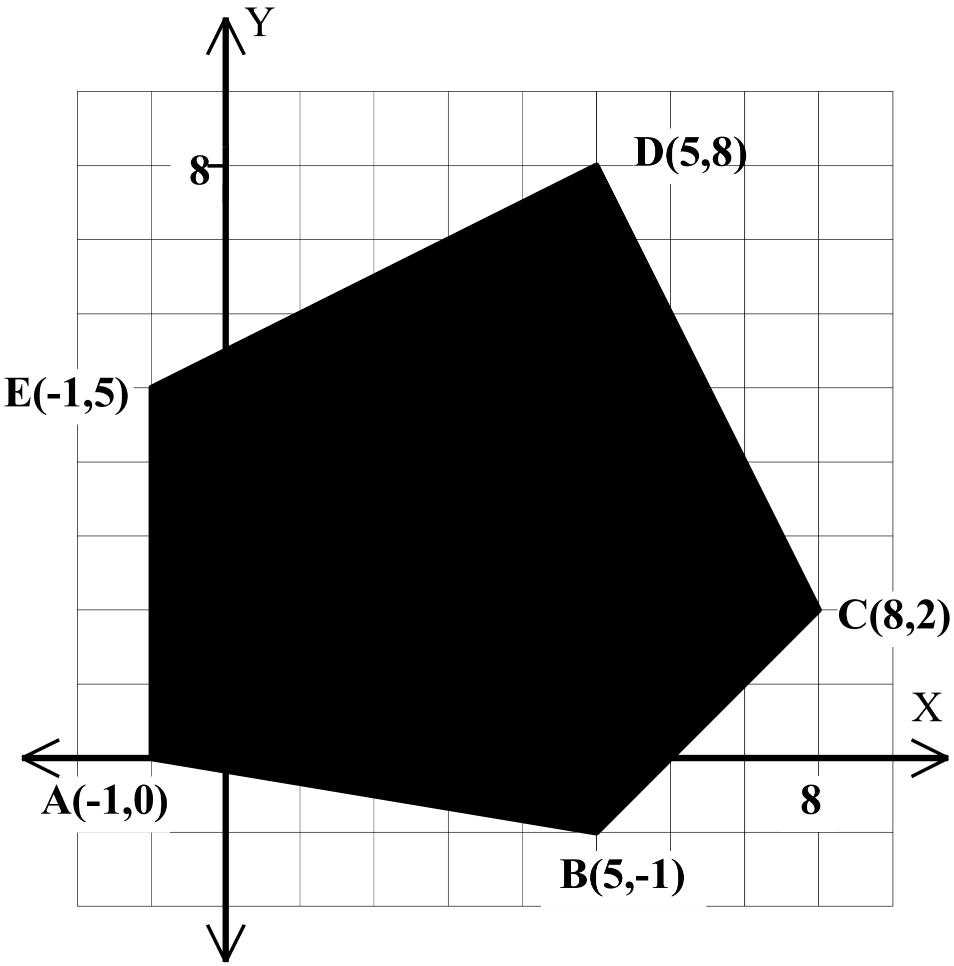
Algebra II Class Worksheet #4 Unit 4



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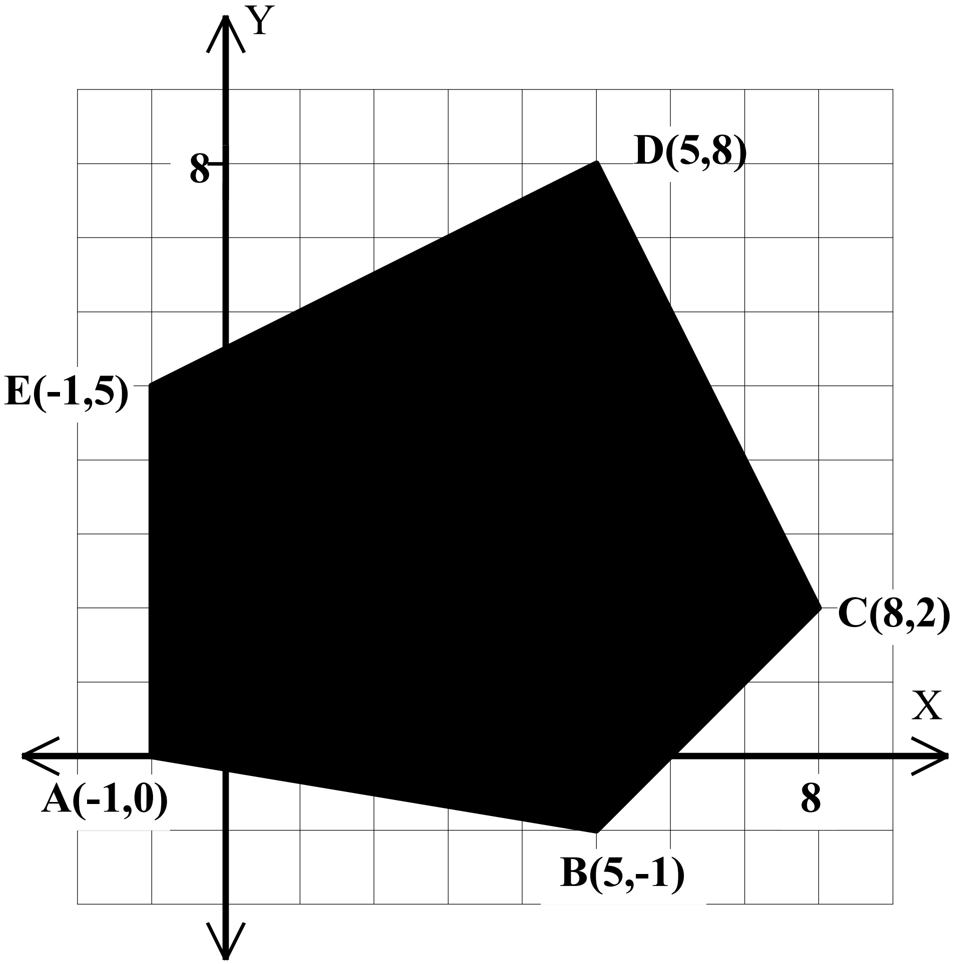
At B(5,-1)

Algebra II Class Worksheet #4 Unit 4



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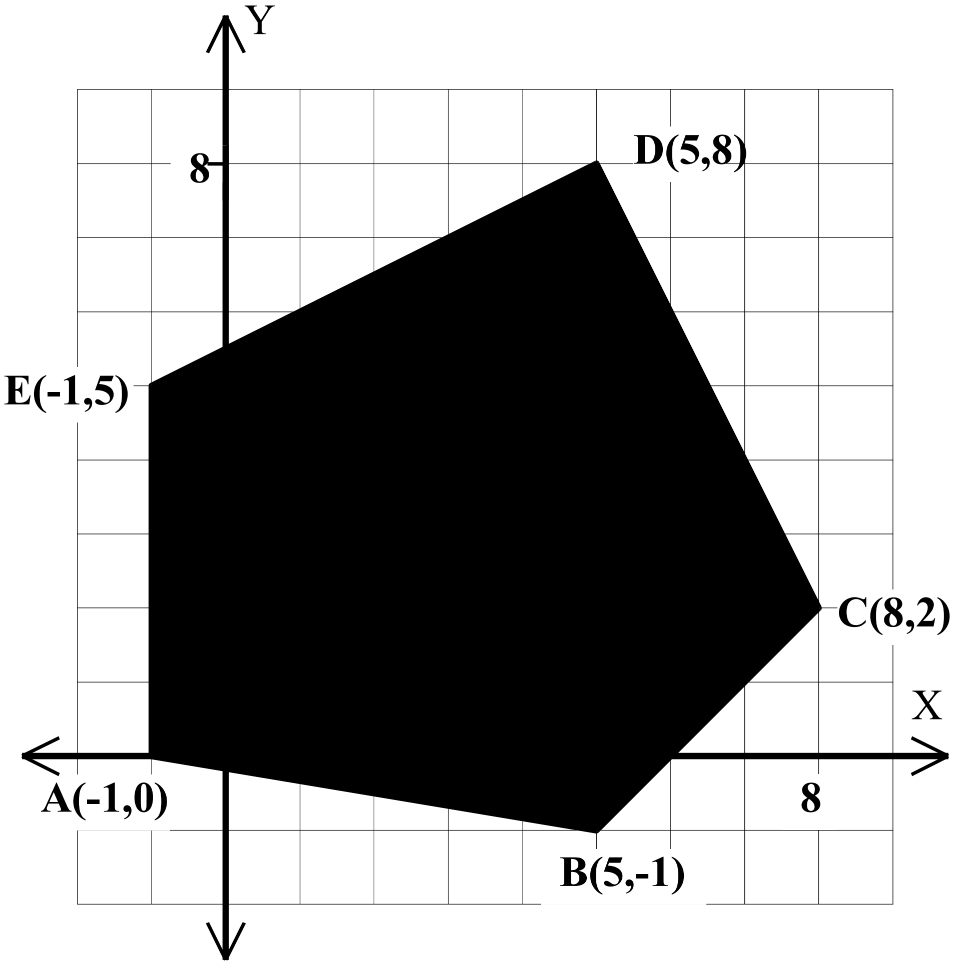
Algebra II Class Worksheet #4 Unit 4



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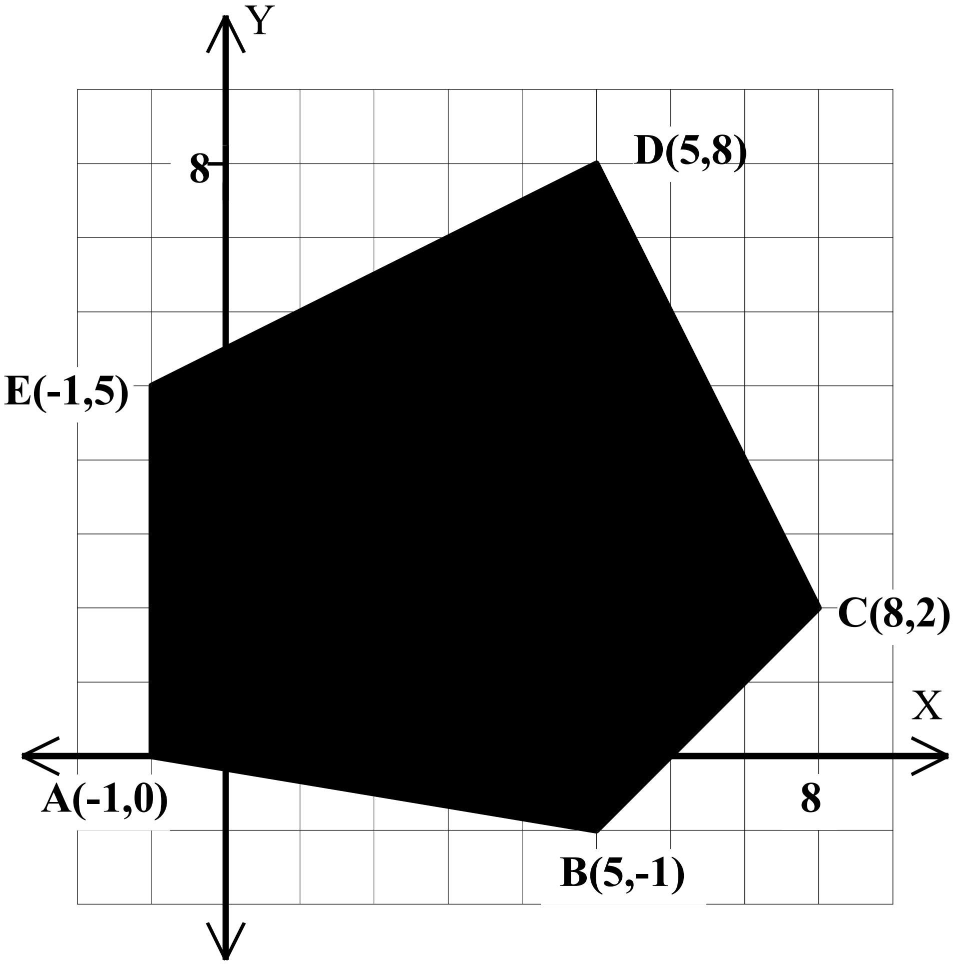
At A(-1,0) $\Rightarrow$ $T = -6 - 0 = \mathbf{-6}$

At B(5,-1) $\Rightarrow$ $T = 30$

Algebra II Class Worksheet #4 Unit 4



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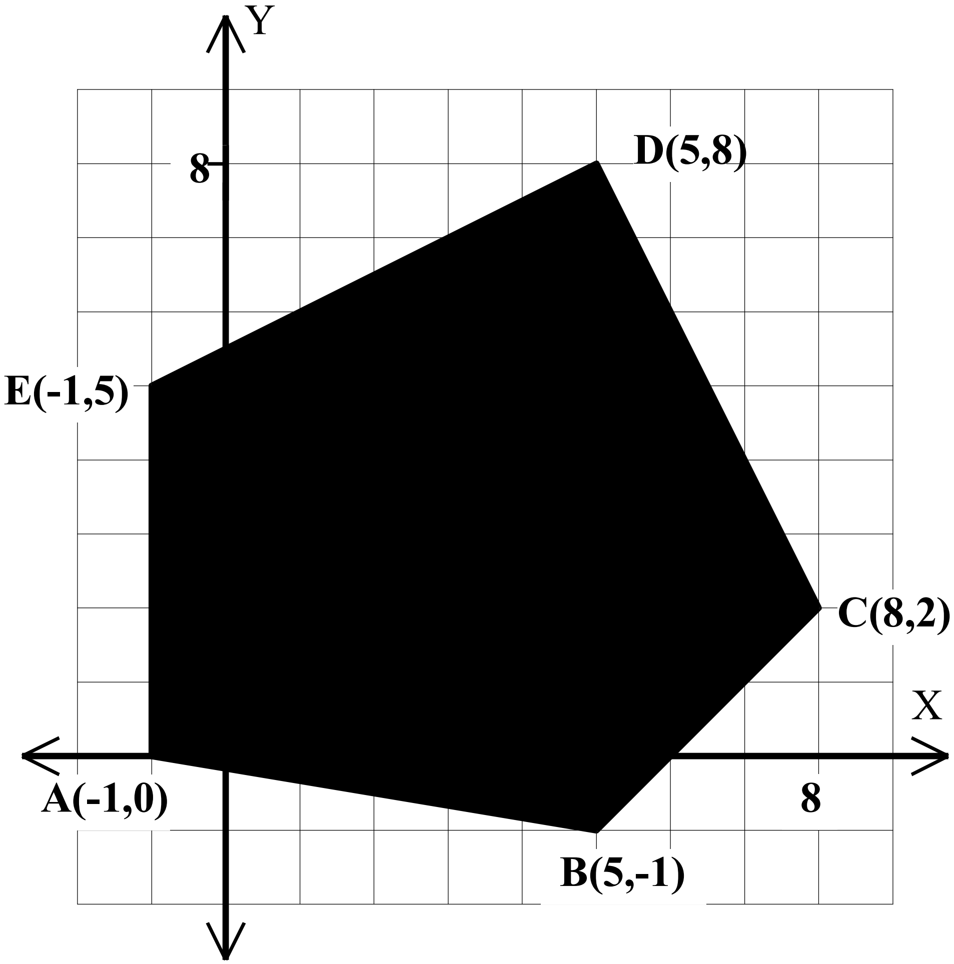
At B(5,-1) ⇨ T = 30 –

Algebra II   Class Worksheet #4   Unit 4



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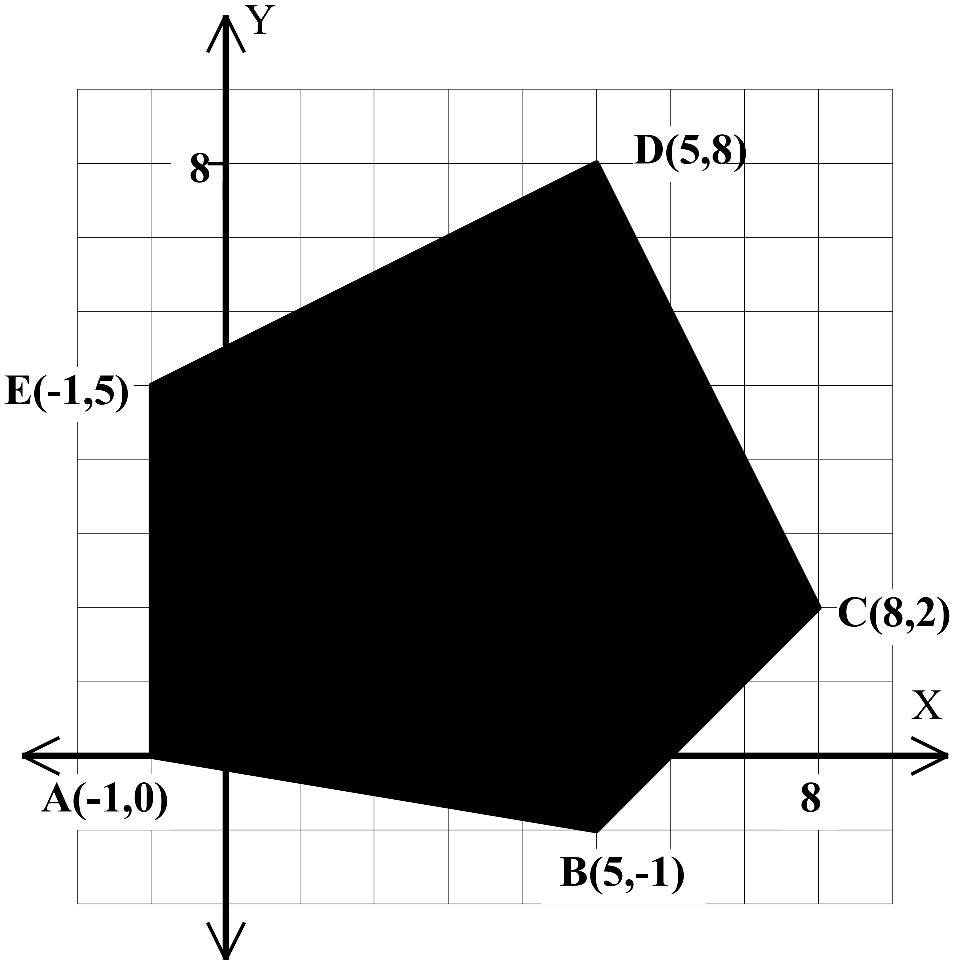
At B(5,-1) $\Rightarrow$ $T = 30 - -2$

Algebra II Class Worksheet #4 Unit 4



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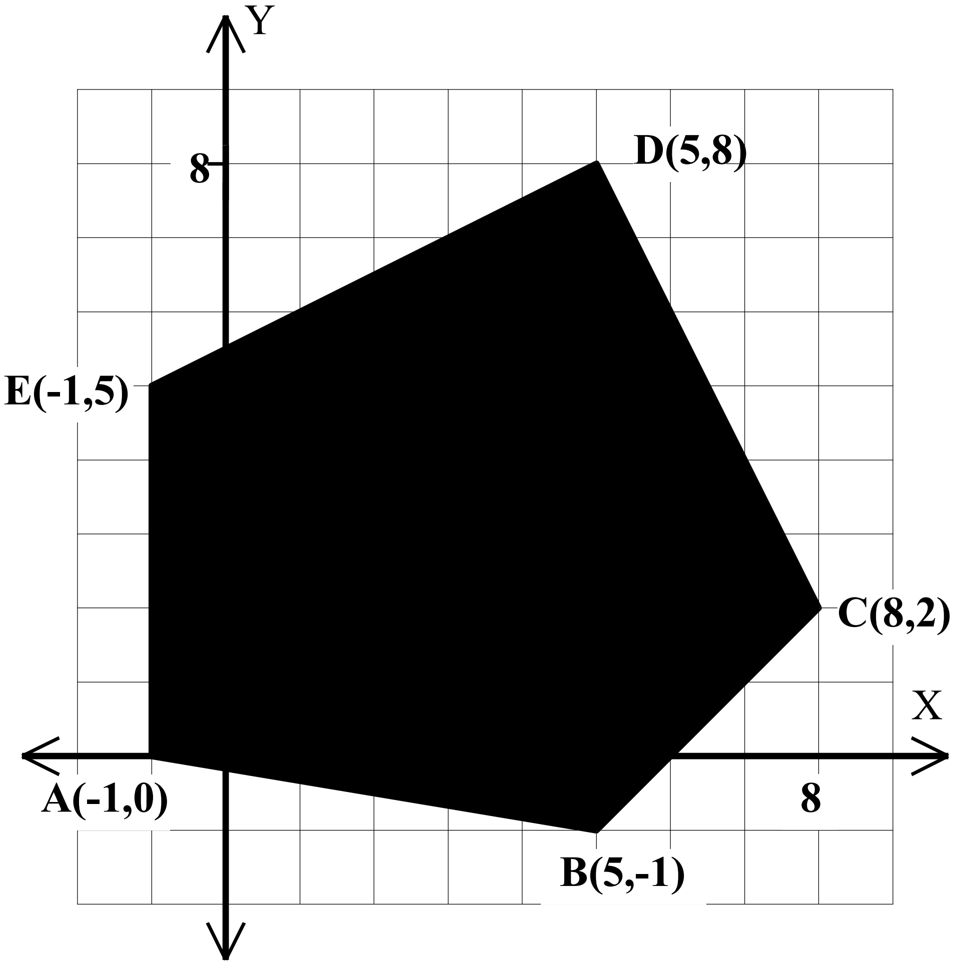
Algebra II Class Worksheet #4 Unit 4



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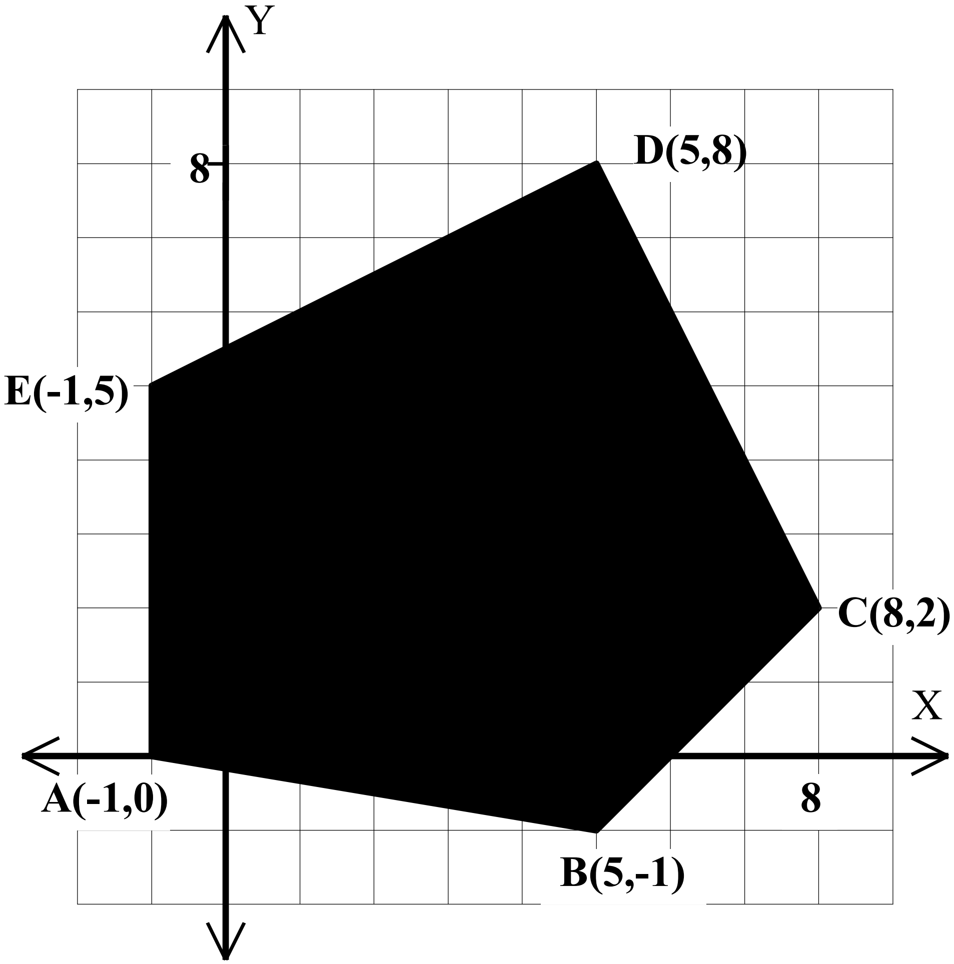
At B(5,-1) ⇨ T = 30 – -2 = **32**

Algebra II Class Worksheet #4 Unit 4



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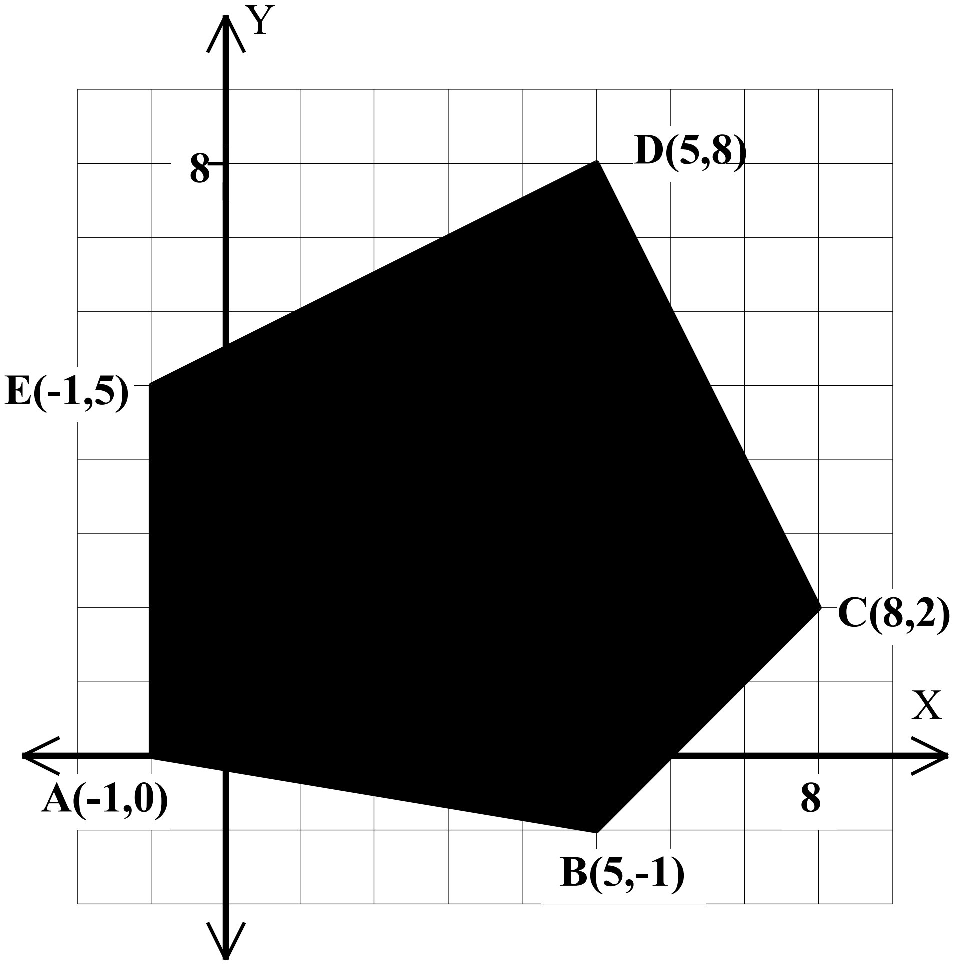
At B(5,-1) ⇨ T = 30 – -2 = **32**

At C(8,2)

Algebra II   Class Worksheet #4   Unit 4



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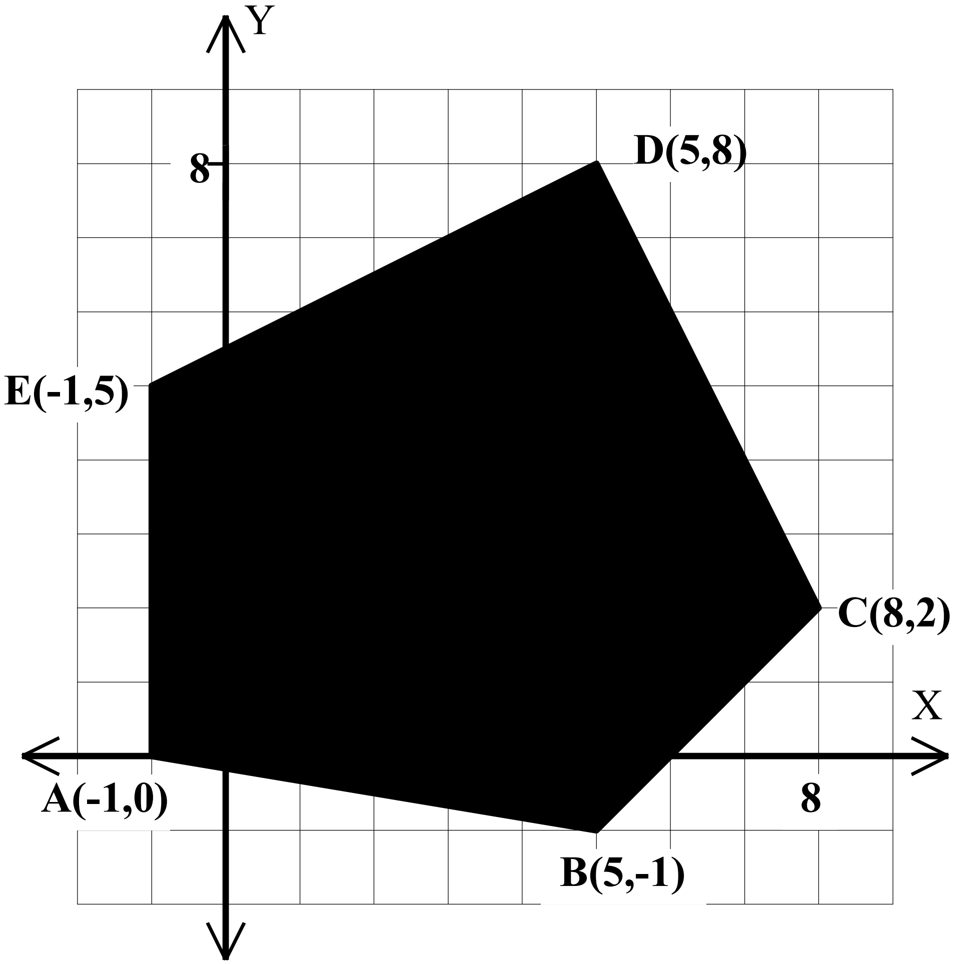
At B(5,-1) $\Rightarrow$ $T = 30 - -2 = \mathbf{32}$

At C(8,2) $\Rightarrow$ $T =$

Algebra II   Class Worksheet #4   Unit 4



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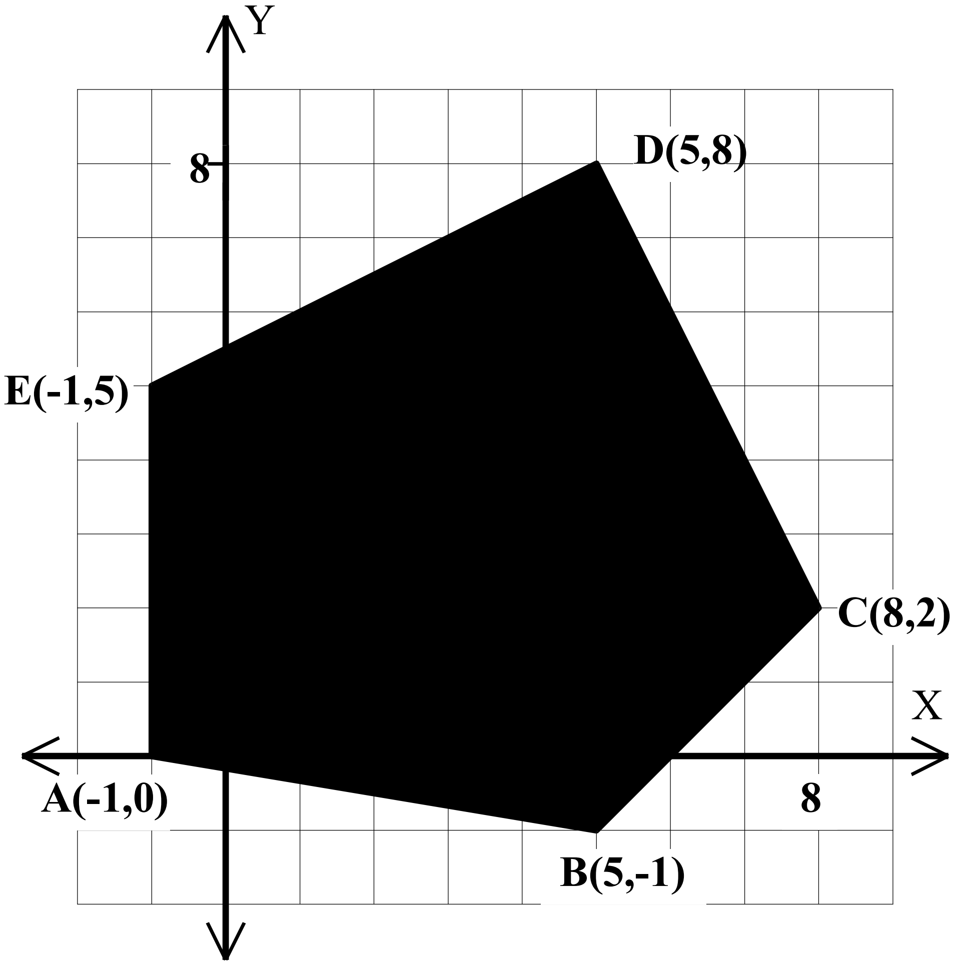
Algebra II Class Worksheet #4 Unit 4



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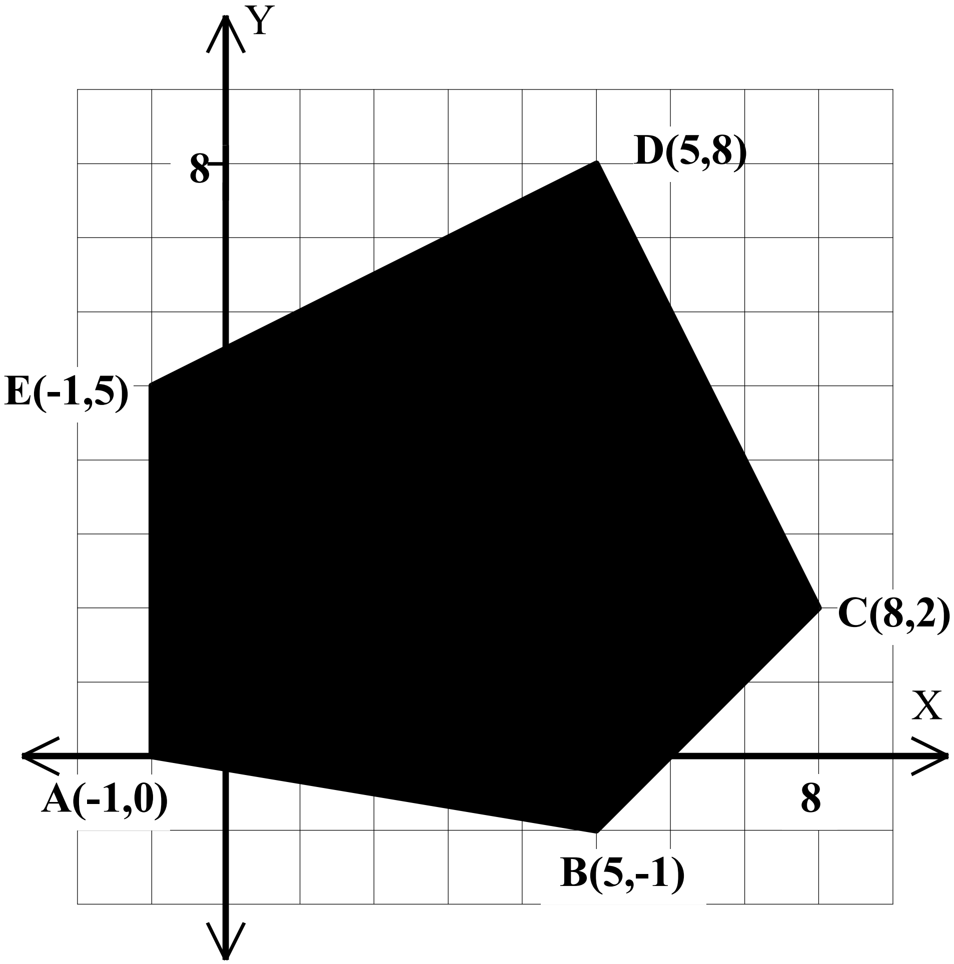
At C(8,2) ⇒ T = 48 –

Algebra II Class Worksheet #4 Unit 4



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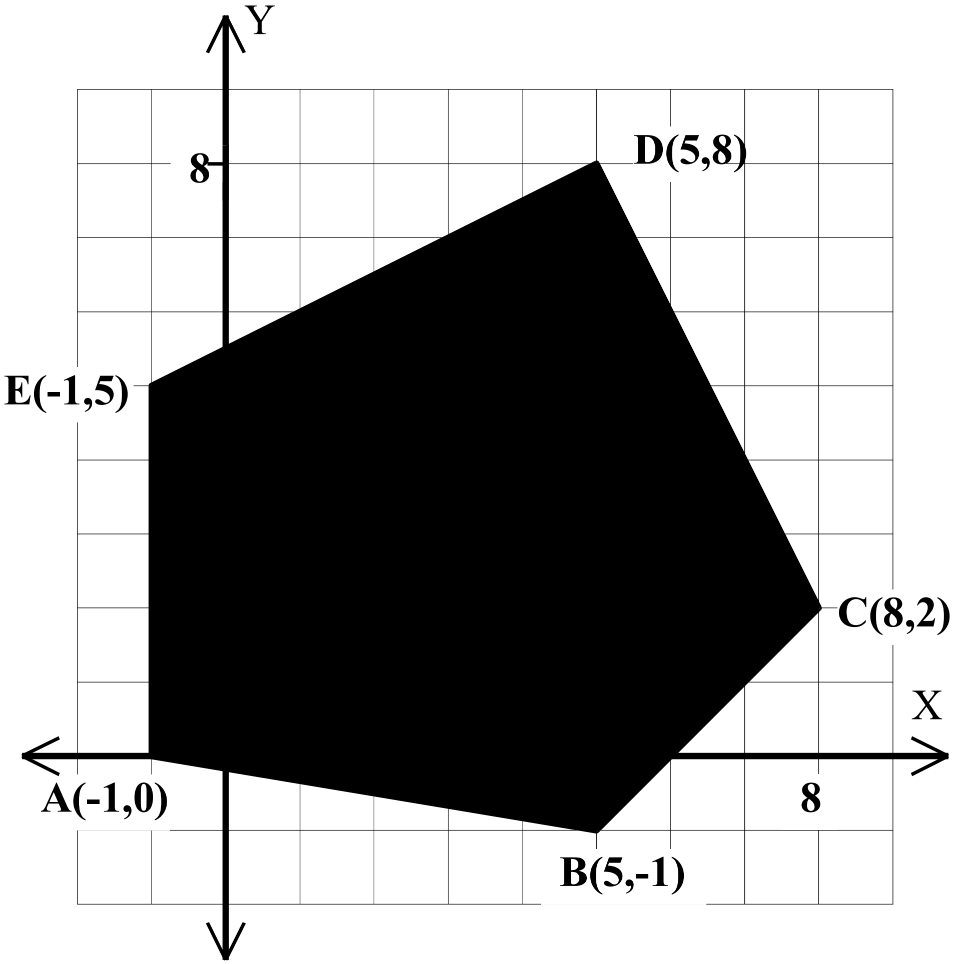
Algebra II Class Worksheet #4 Unit 4



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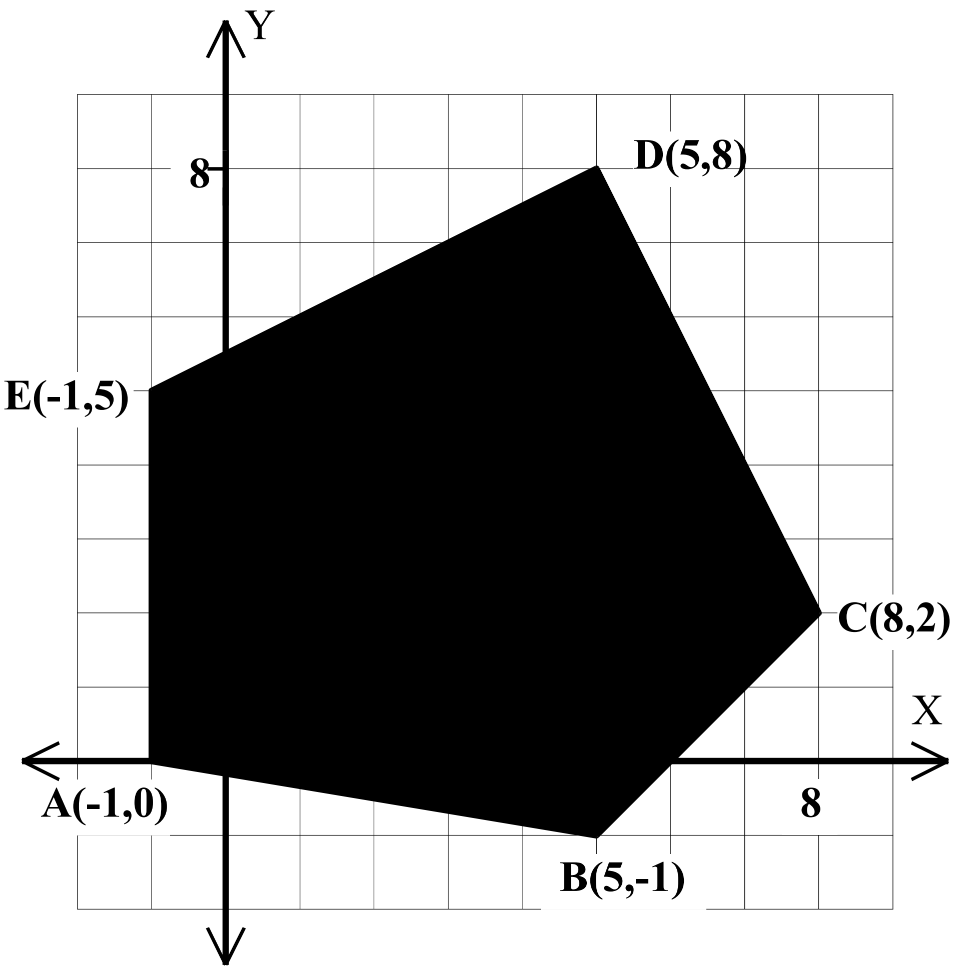
Algebra II Class Worksheet #4 Unit 4



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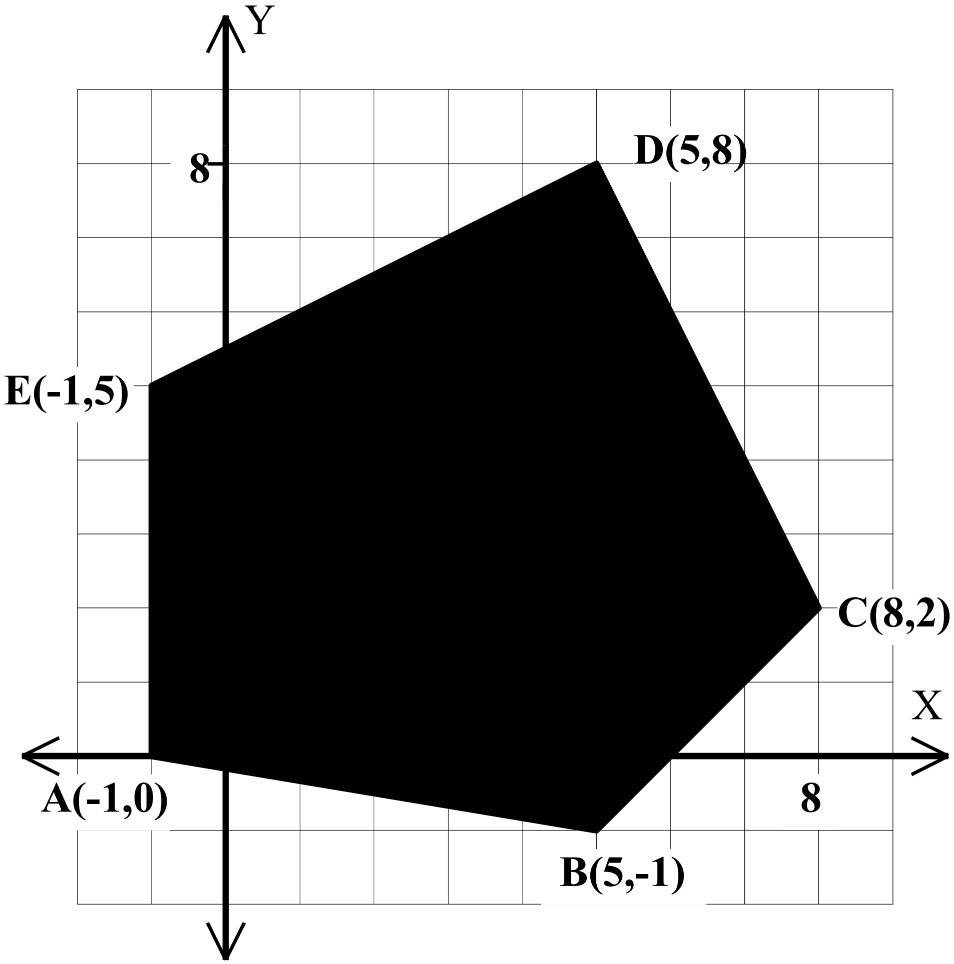
Algebra II Class Worksheet #4 Unit 4



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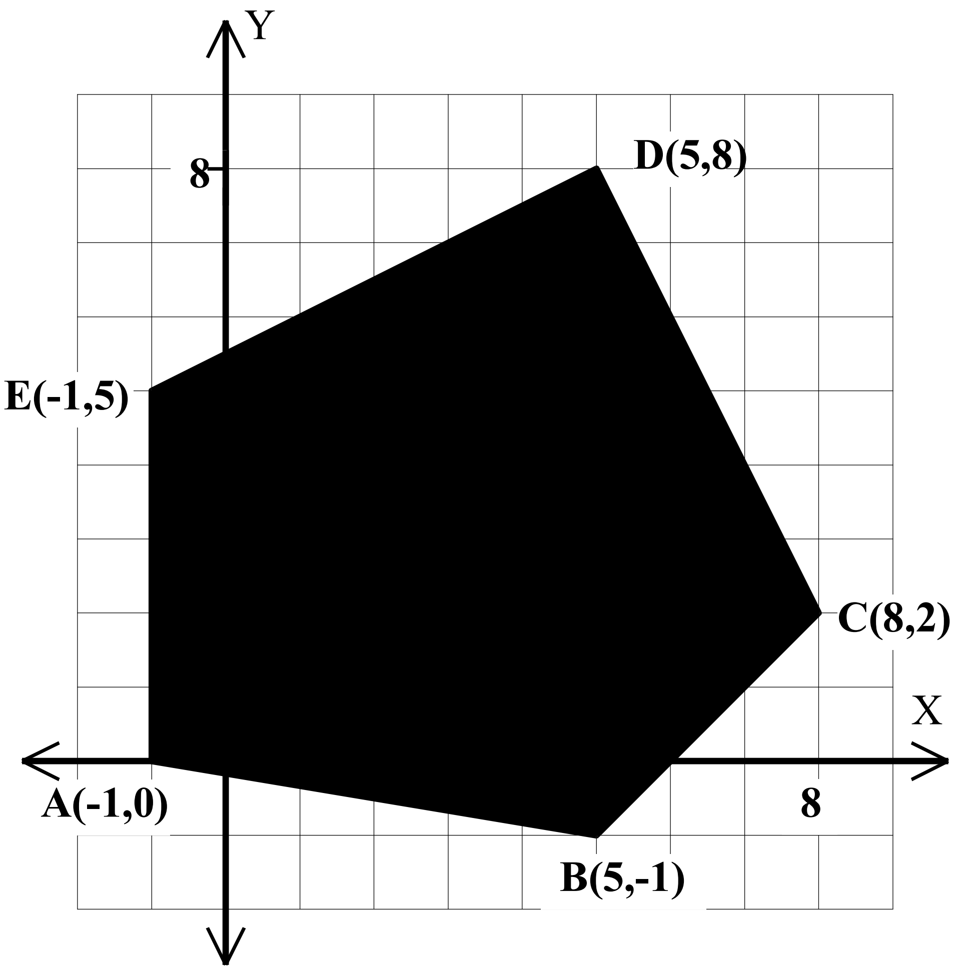
At D(5,8)

Algebra II Class Worksheet #4 Unit 4



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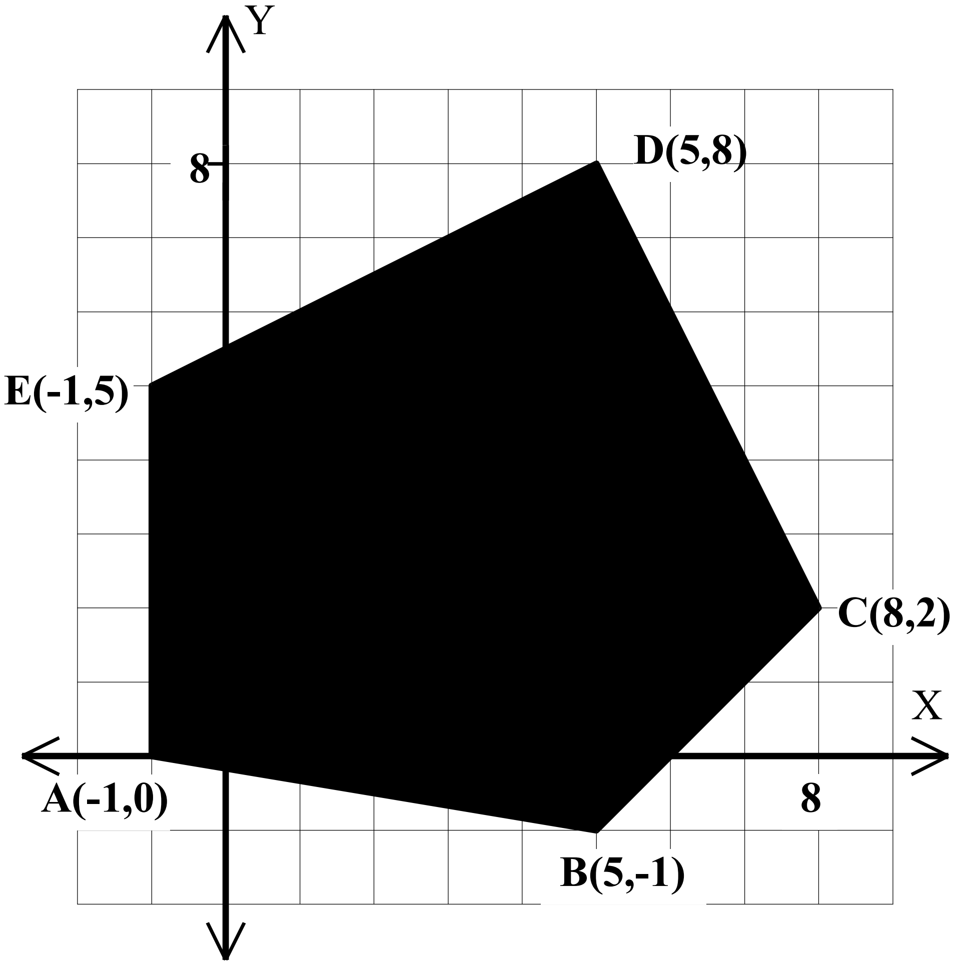
Algebra II Class Worksheet #4 Unit 4



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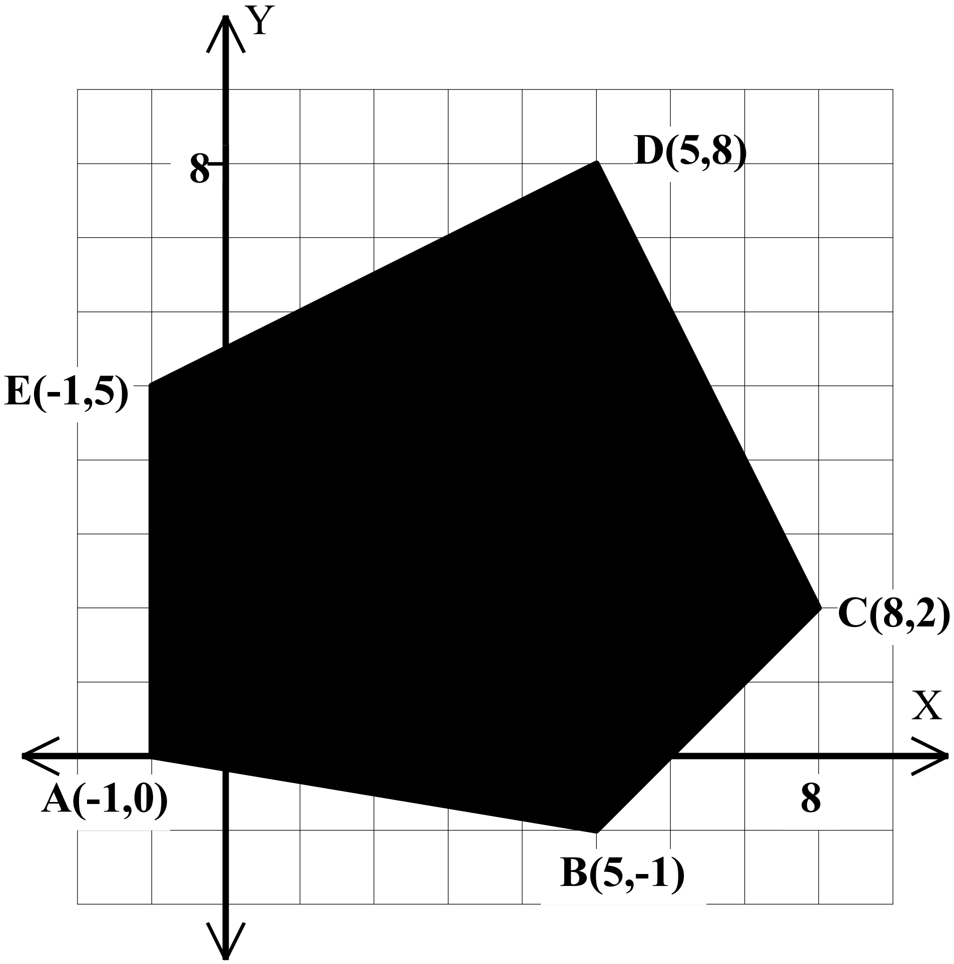
Algebra II Class Worksheet #4 Unit 4



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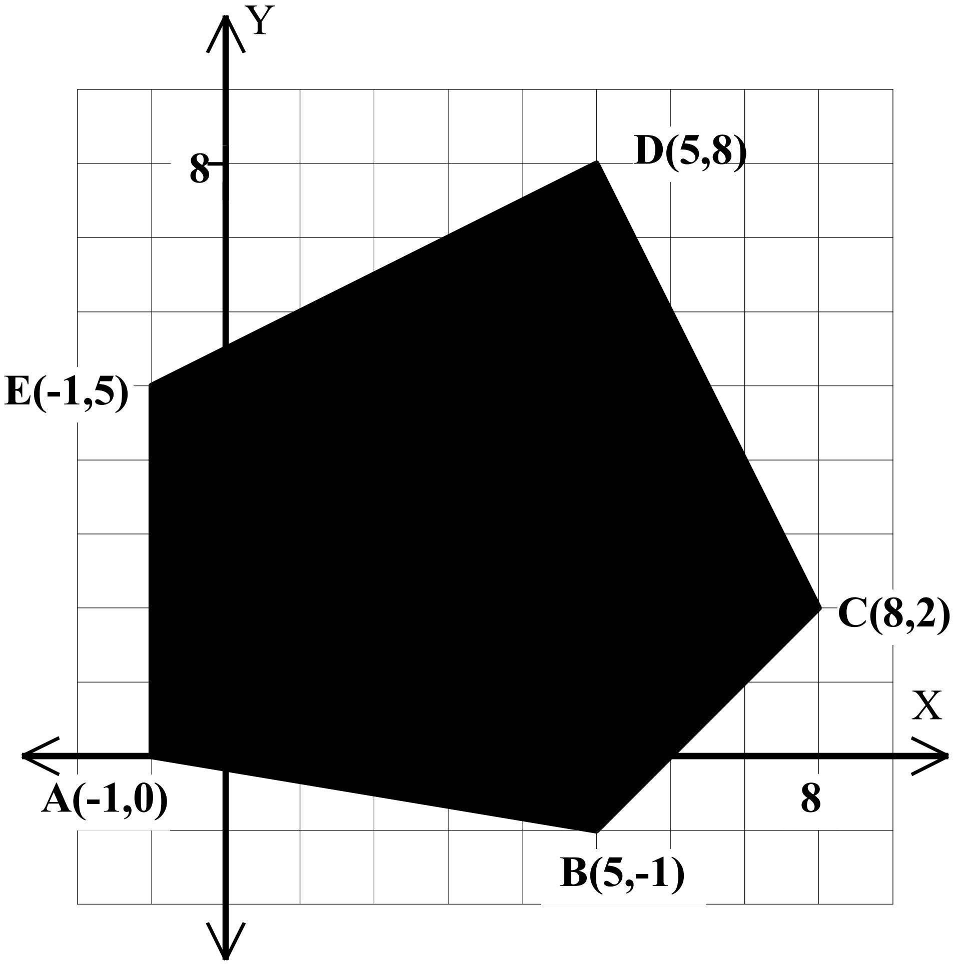
Algebra II Class Worksheet #4 Unit 4



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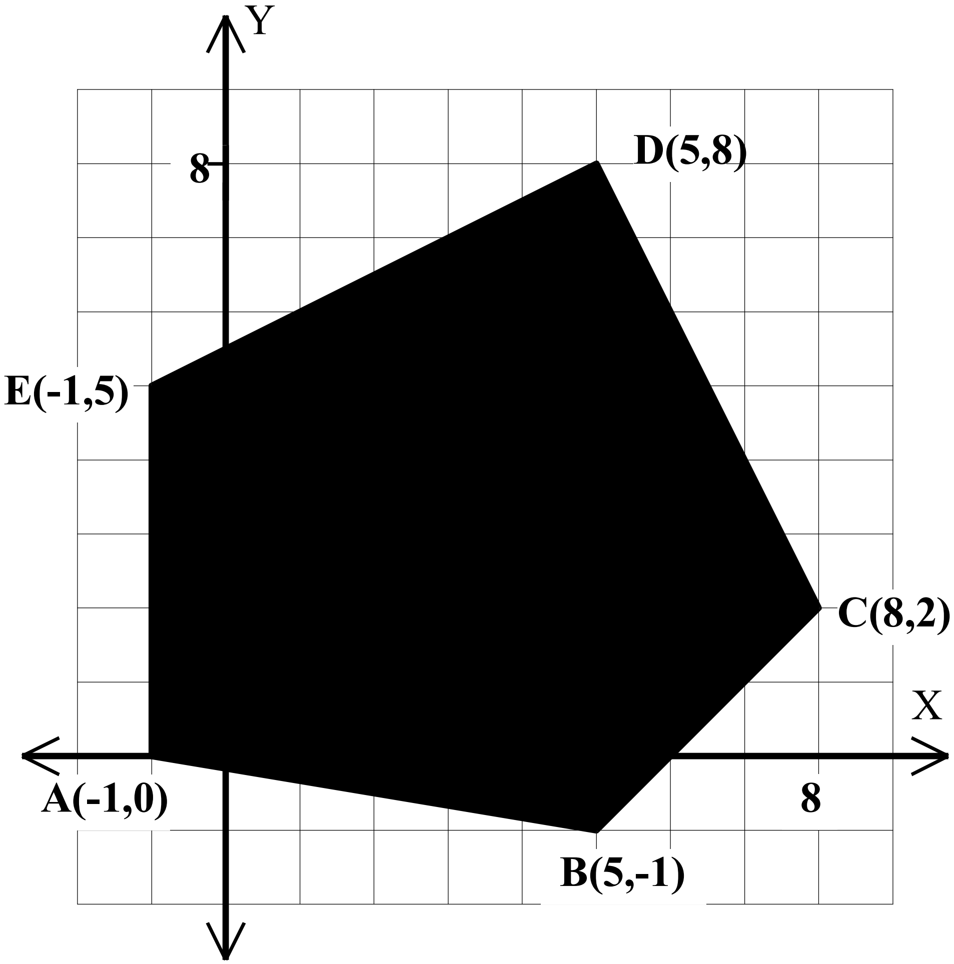
At D(5,8) $\Longrightarrow$ $T = 30 - 16$

Algebra II Class Worksheet #4 Unit 4



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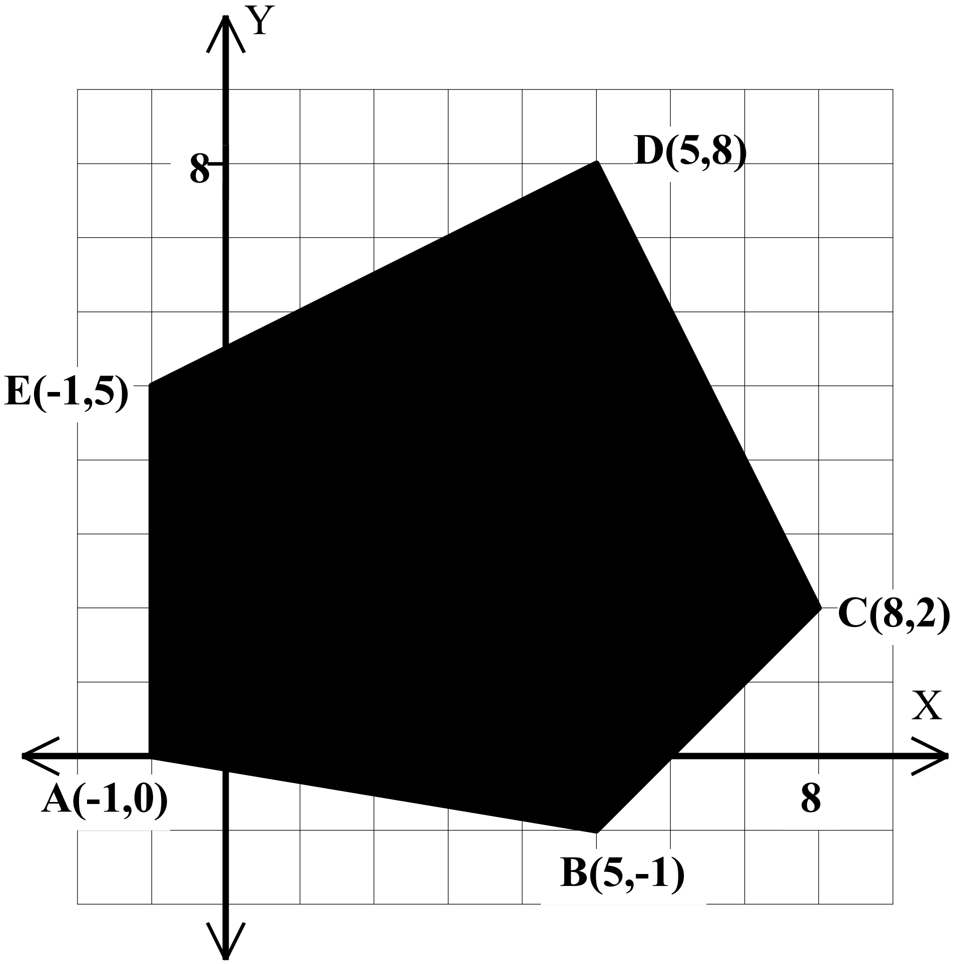
Algebra II Class Worksheet #4 Unit 4



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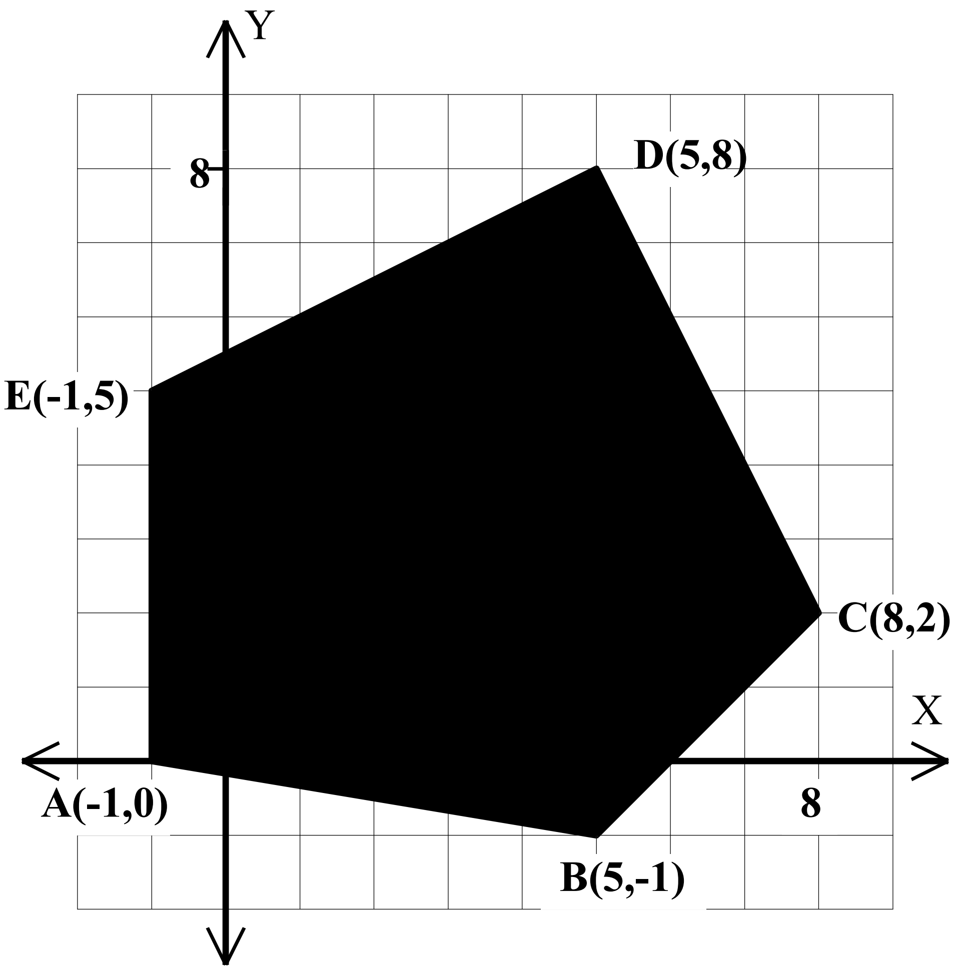
At D(5,8) $\Longrightarrow$ T = 30 – 16 = **14**

Algebra II   Class Worksheet #4   Unit 4



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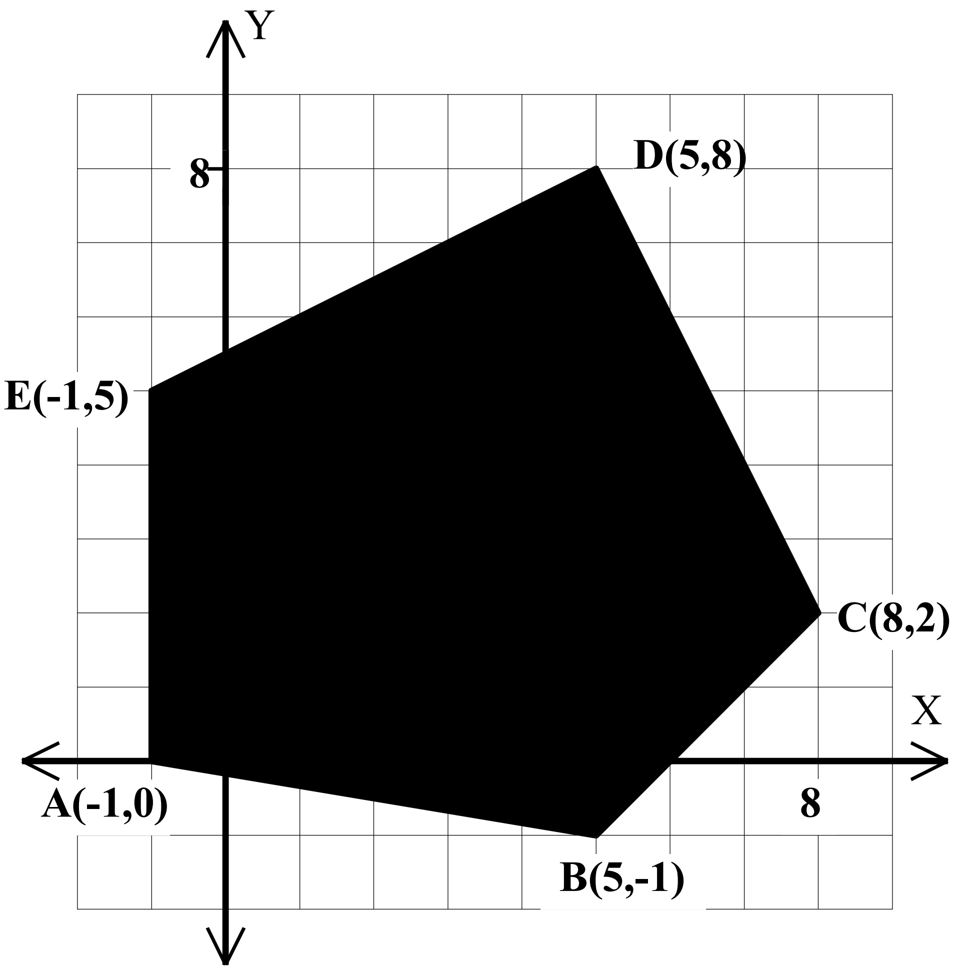
At E(-1,5) $\Longrightarrow$

Algebra II Class Worksheet #4 Unit 4



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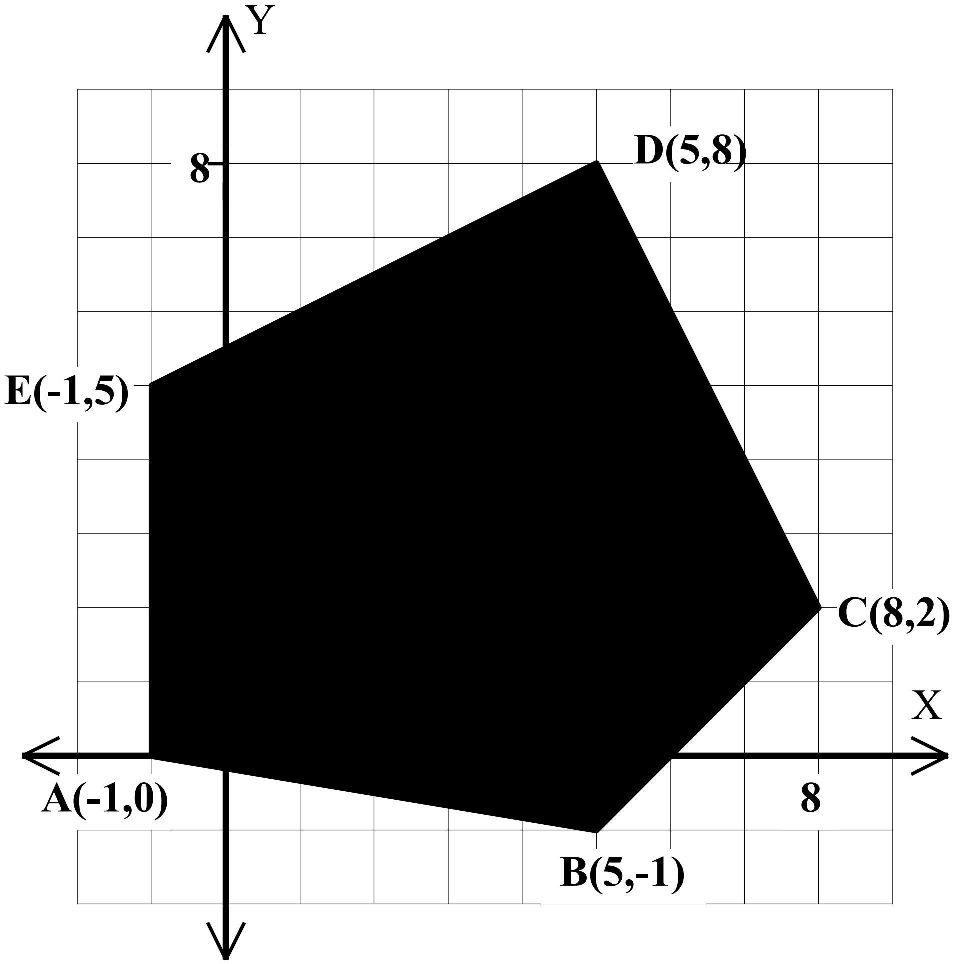

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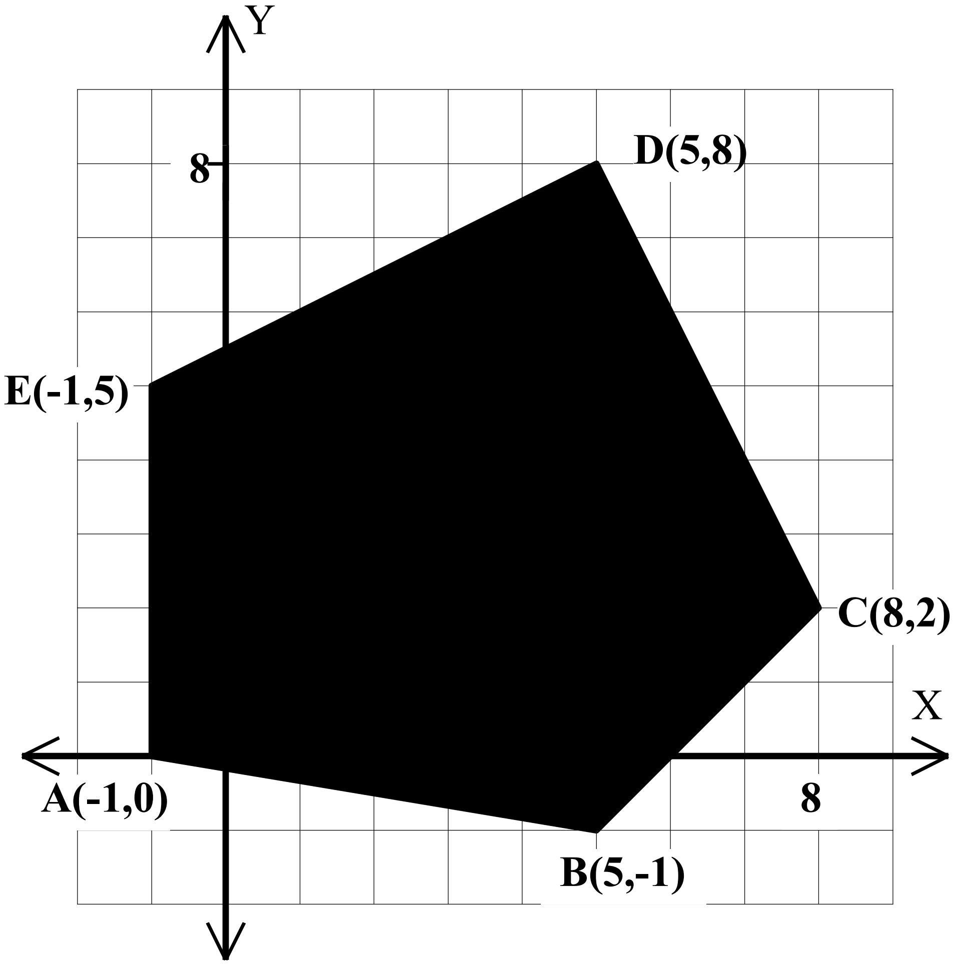

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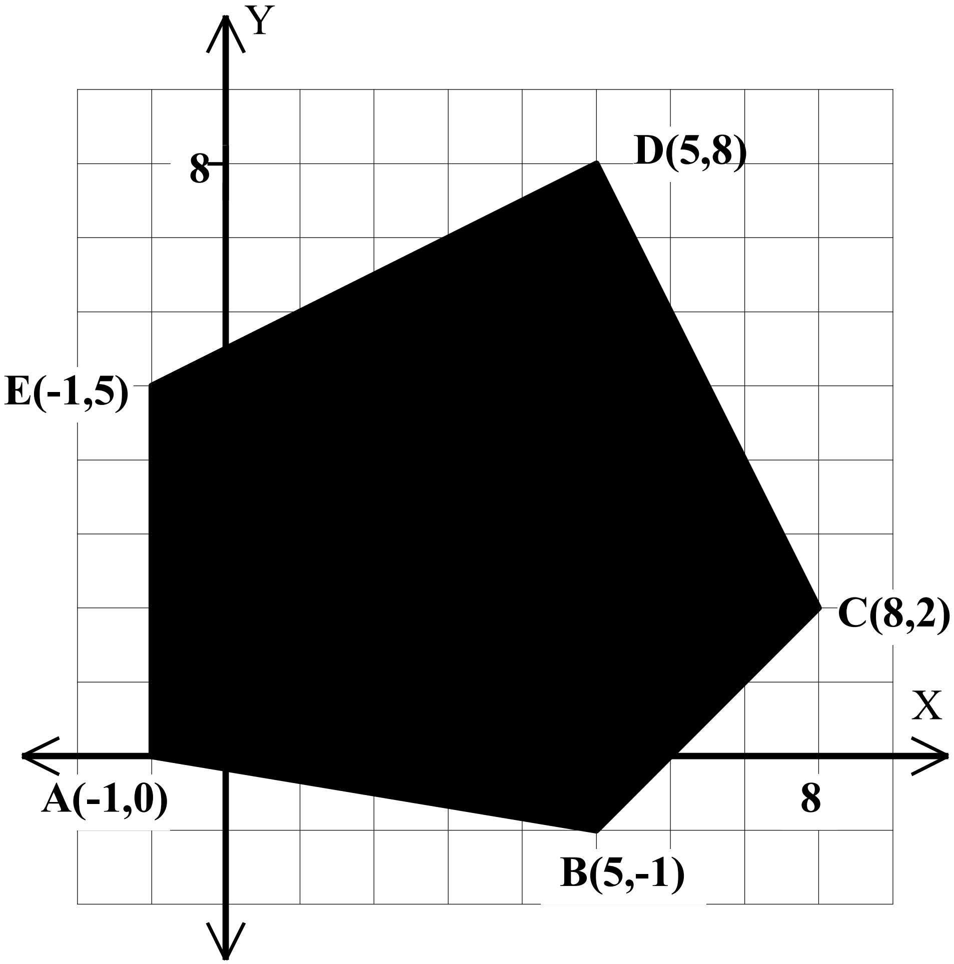

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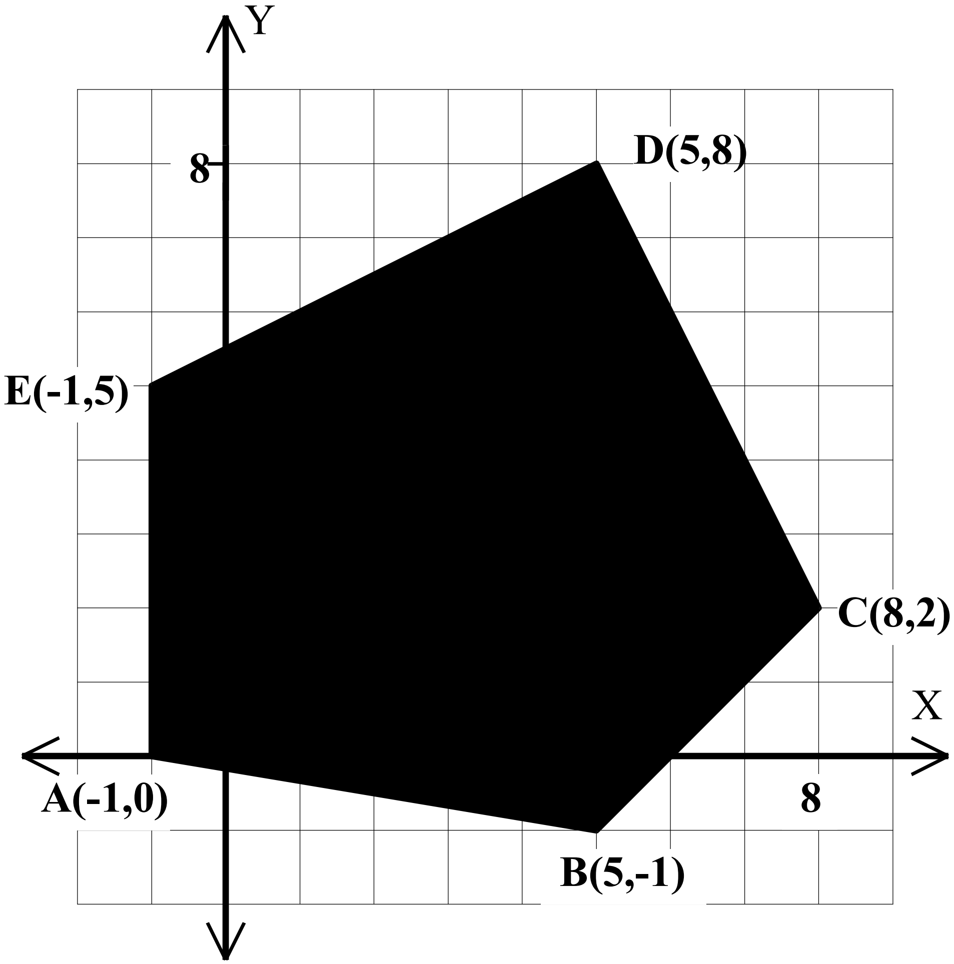
Algebra II Class Worksheet #4 Unit 4



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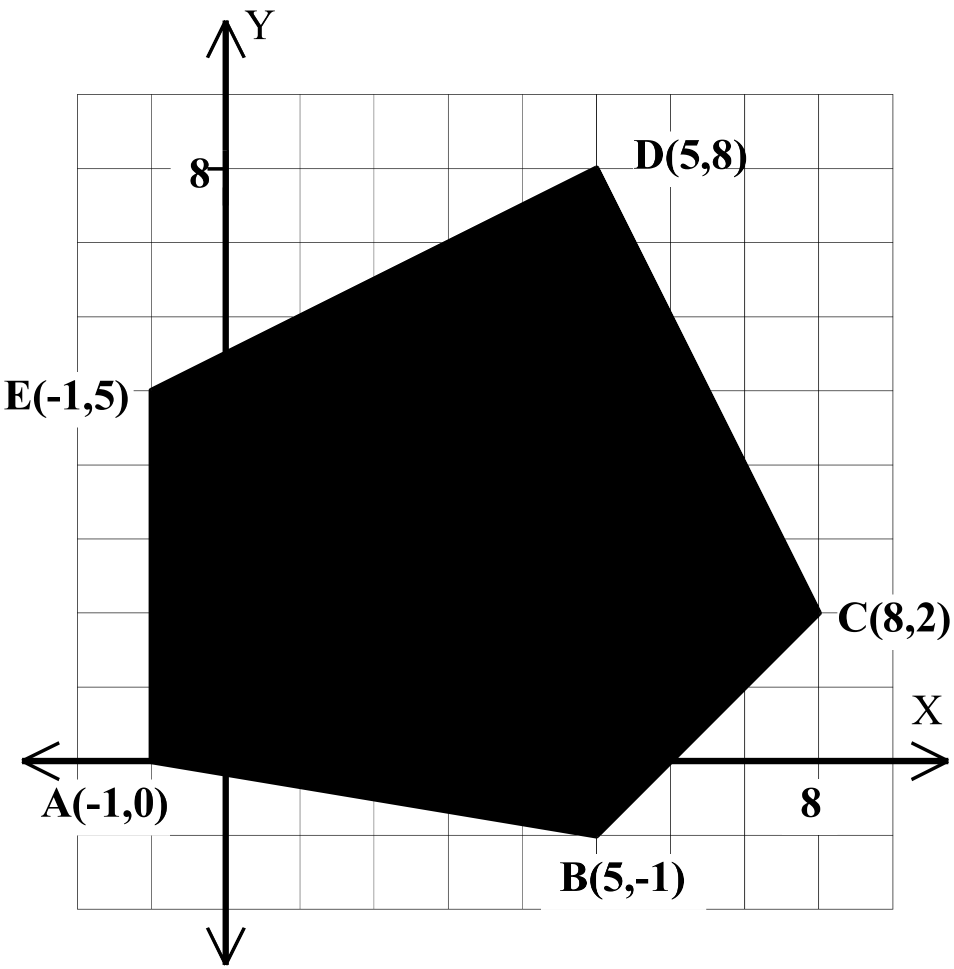

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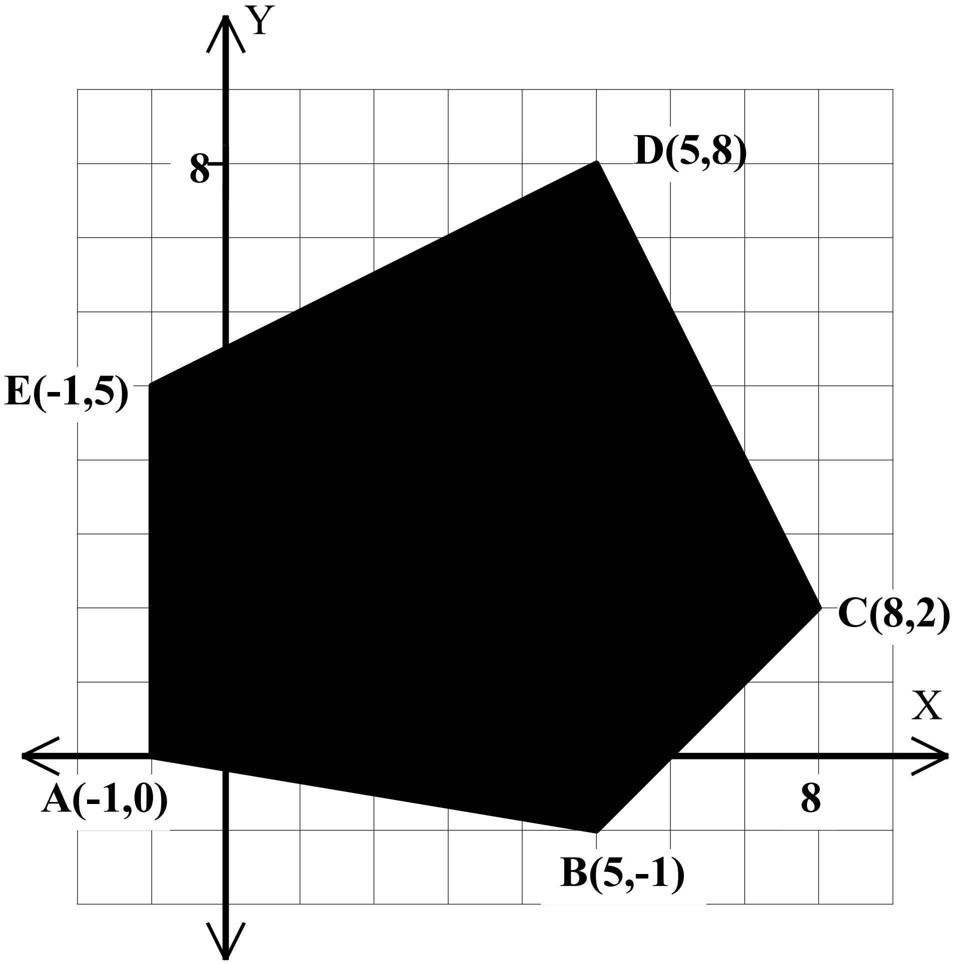

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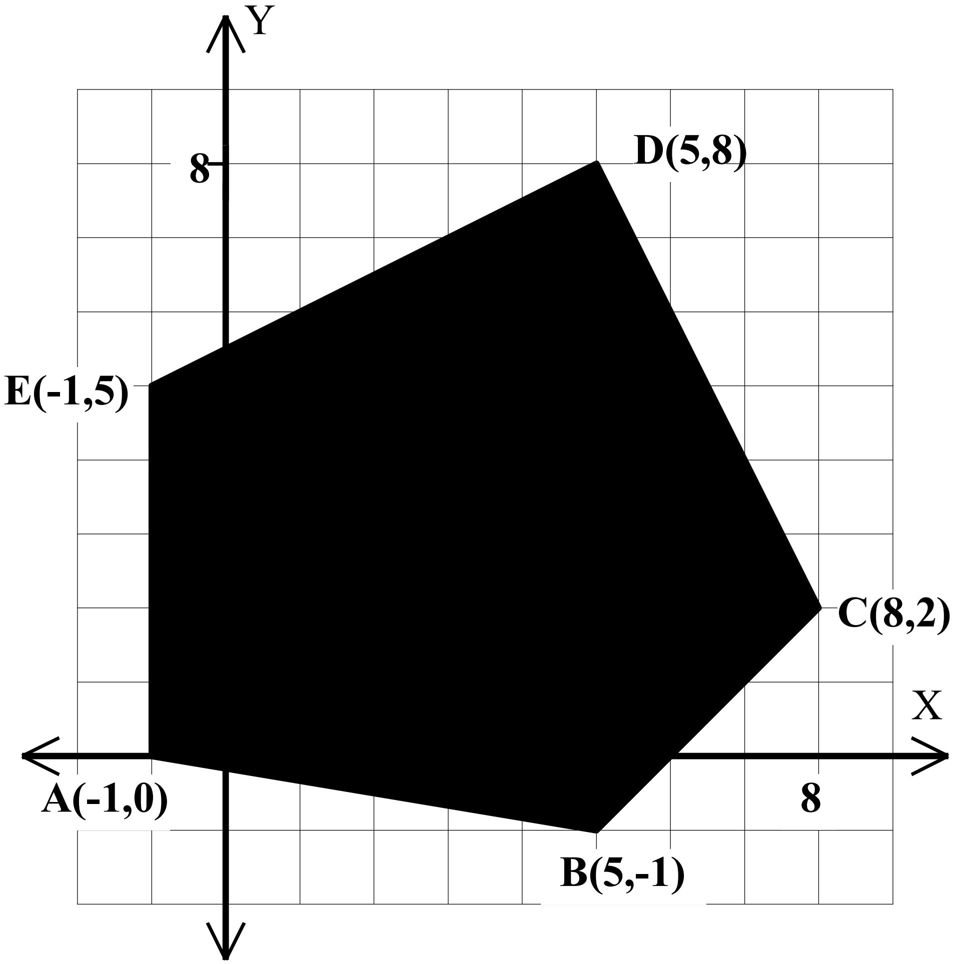

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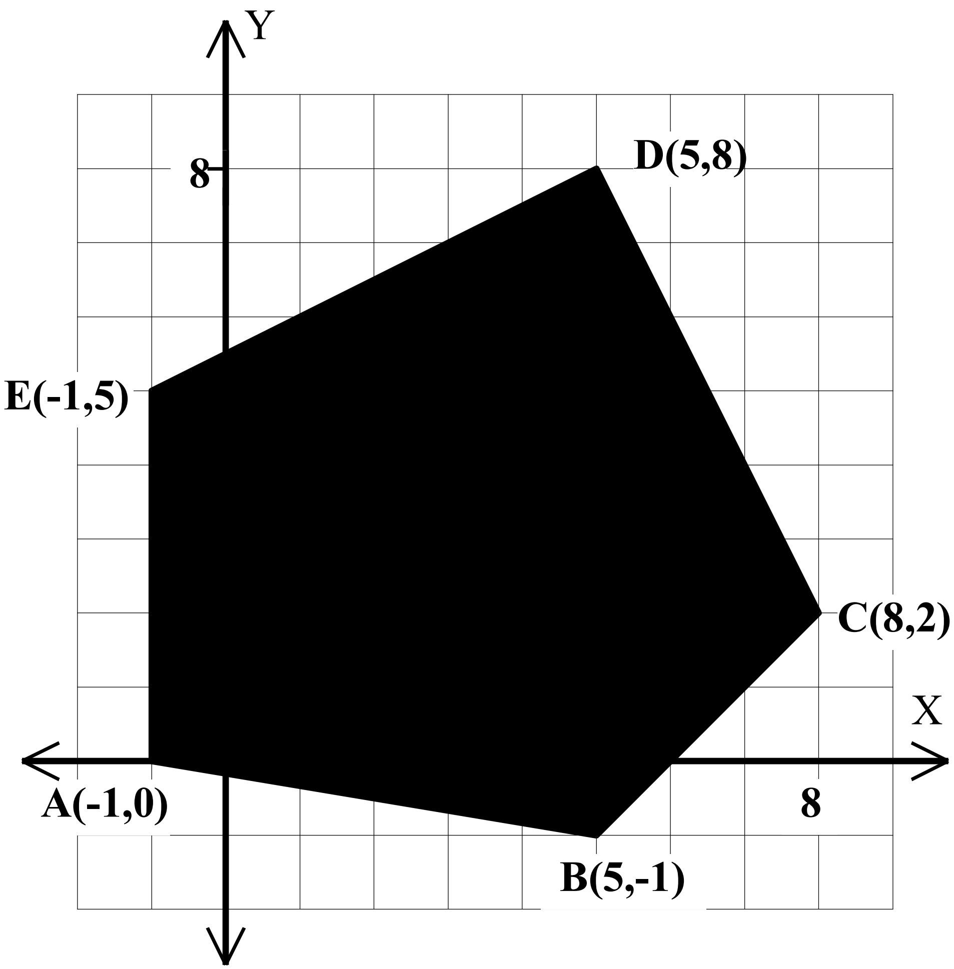
Algebra II Class Worksheet #4 Unit 4



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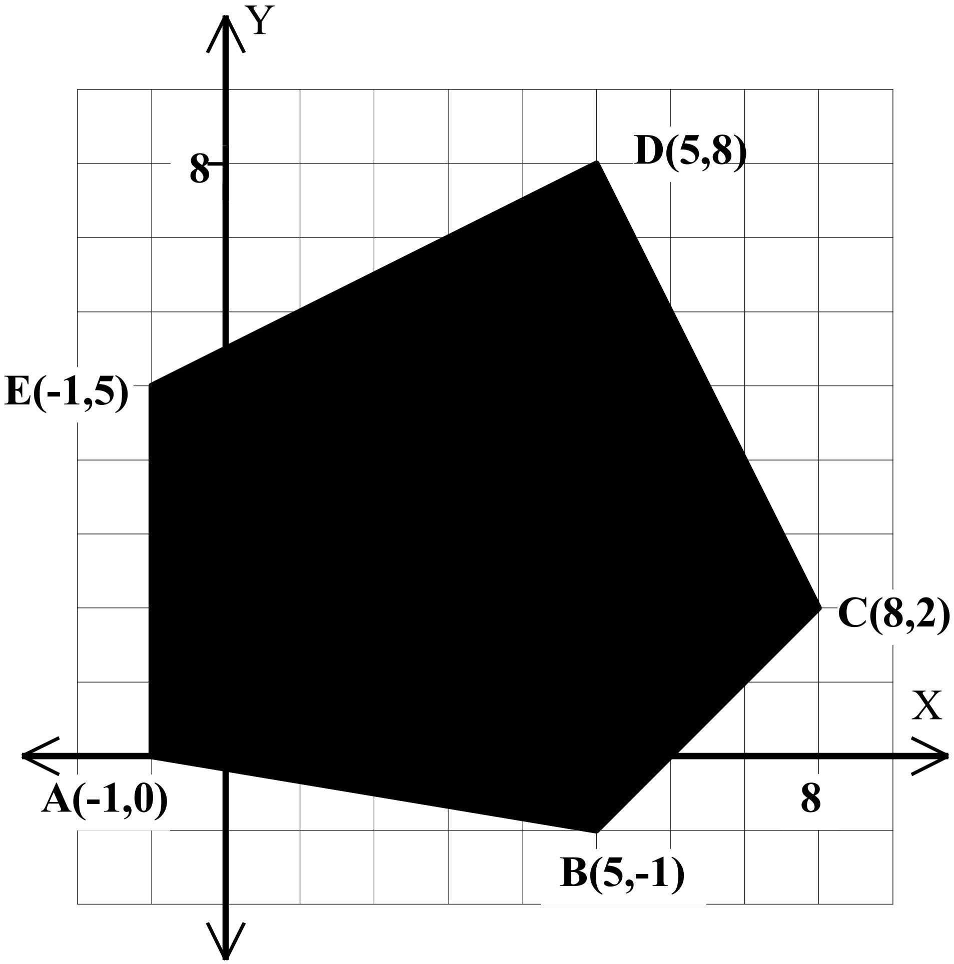

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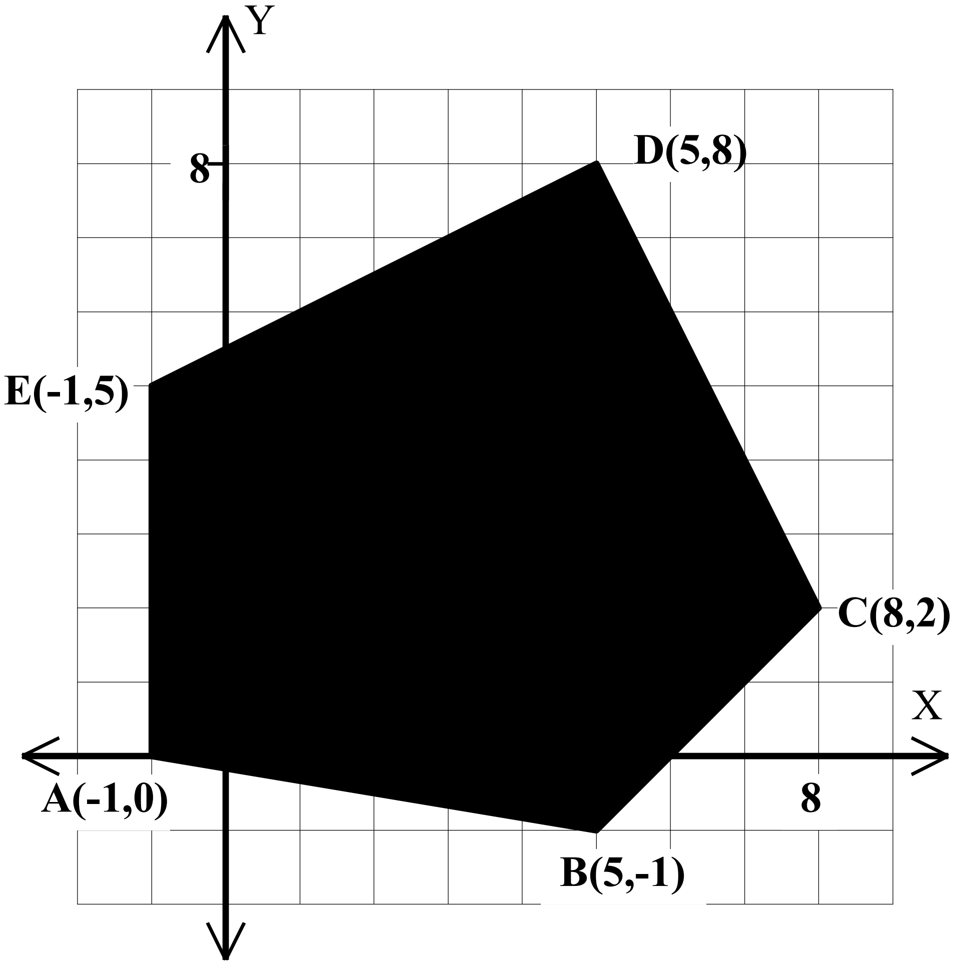

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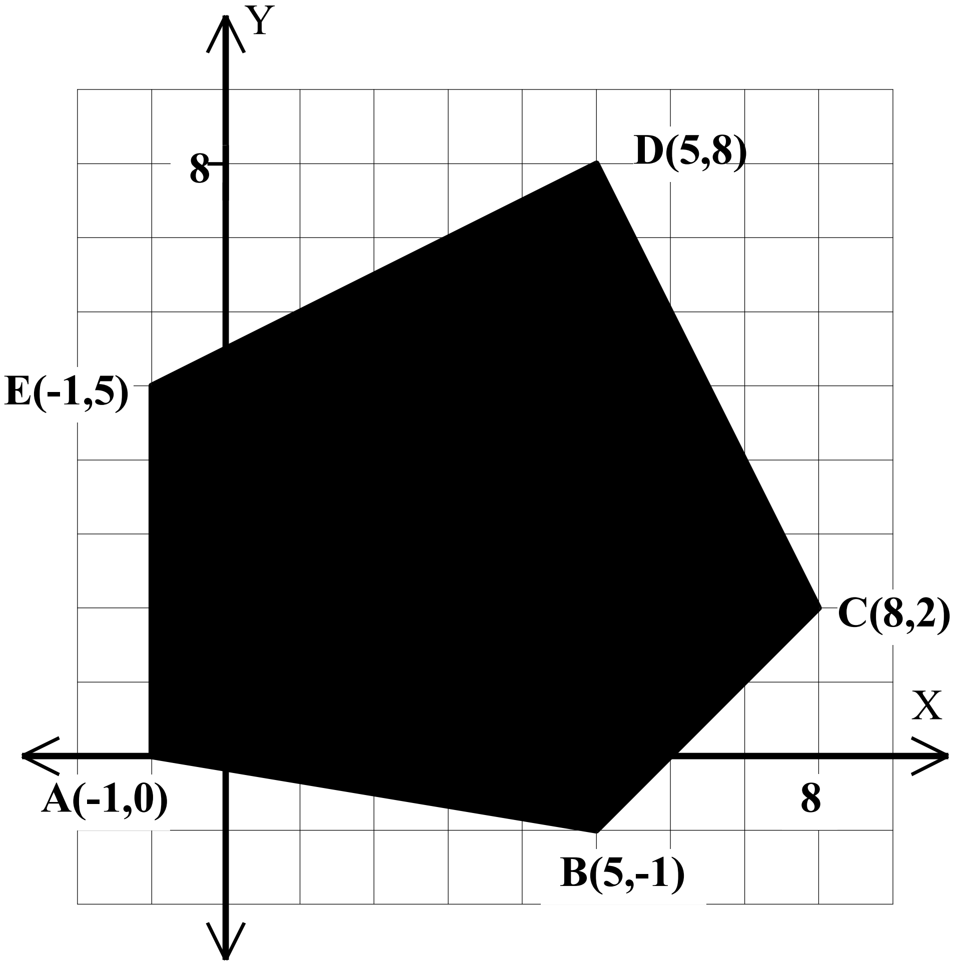

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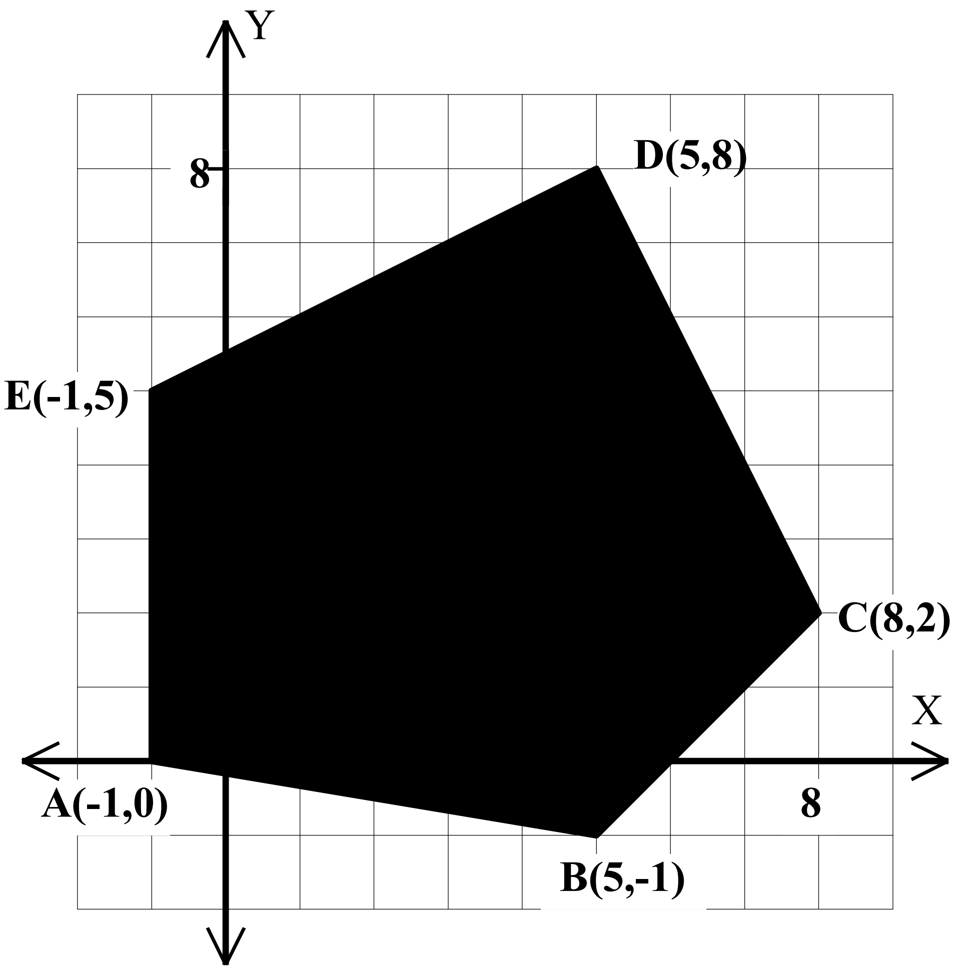

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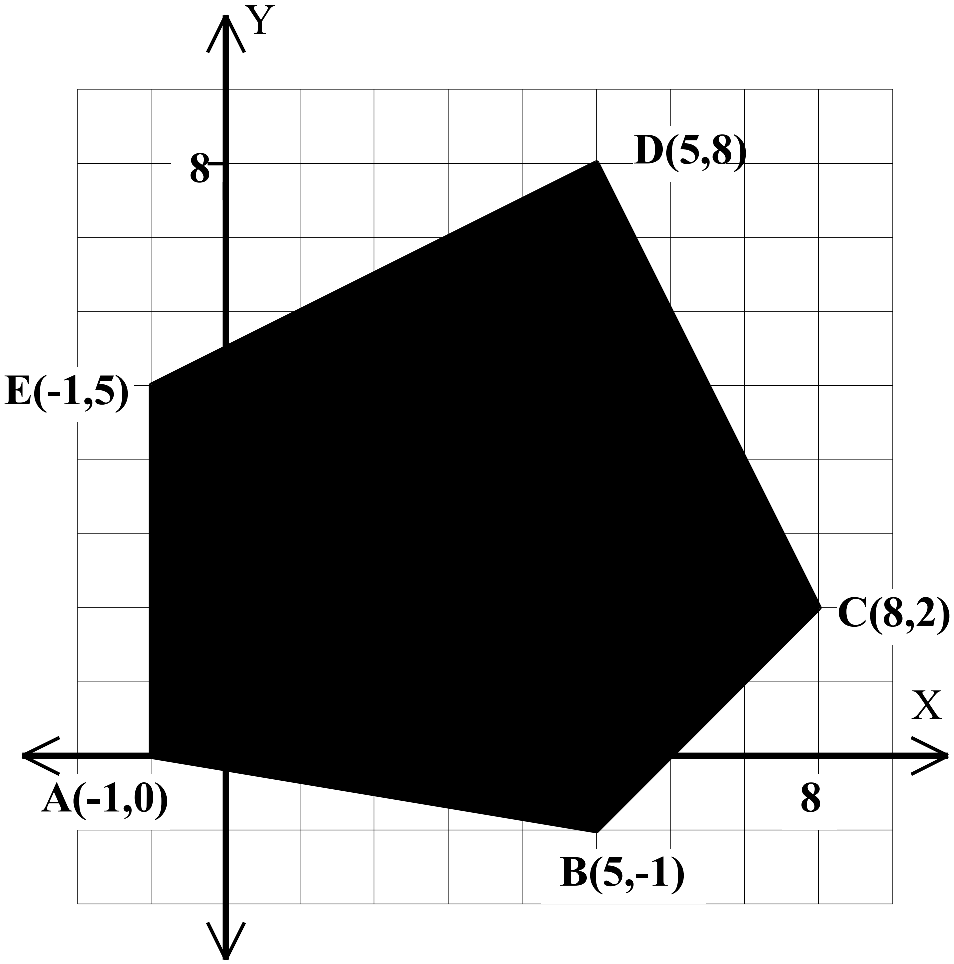

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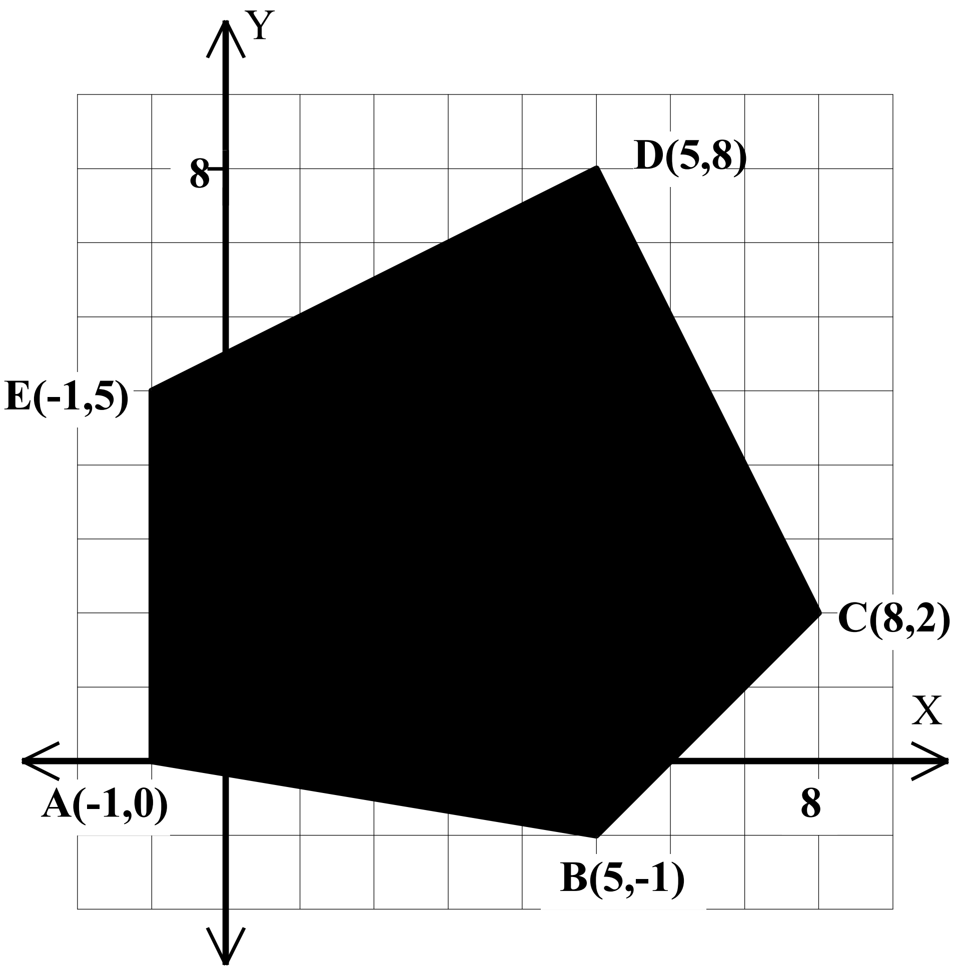

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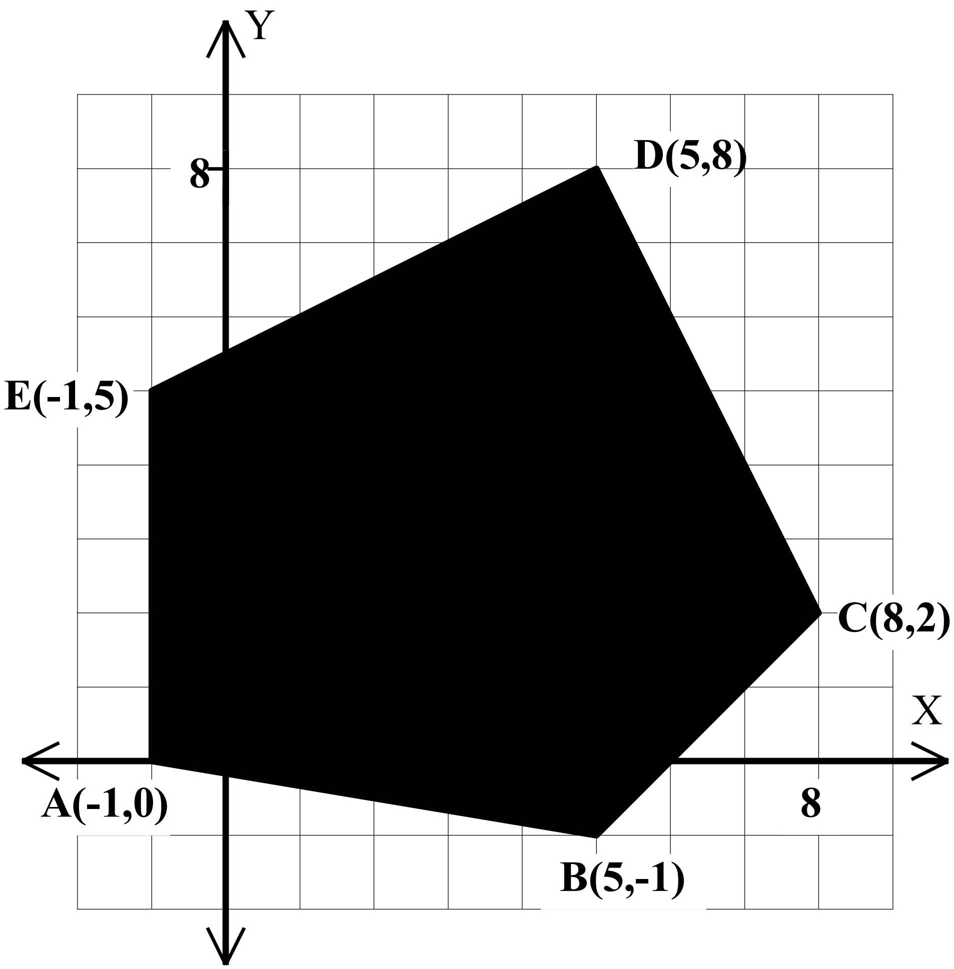

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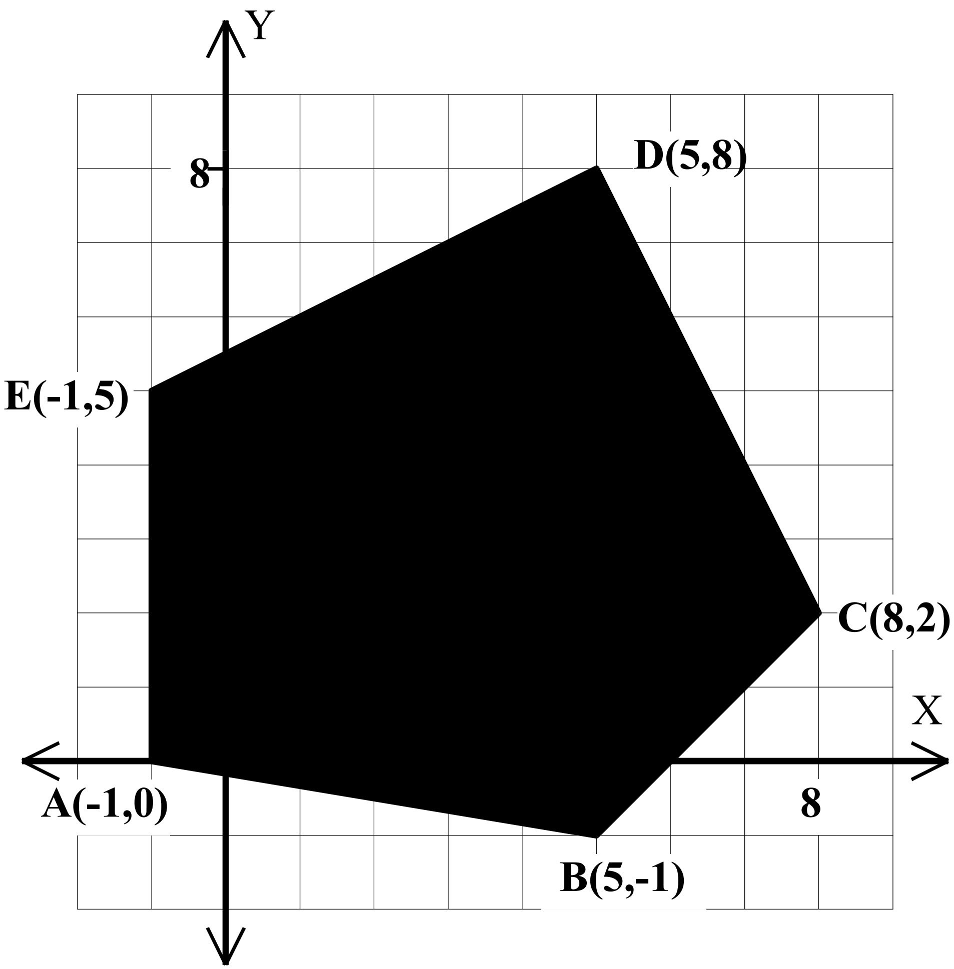
Algebra II   Class Worksheet #4   Unit 4



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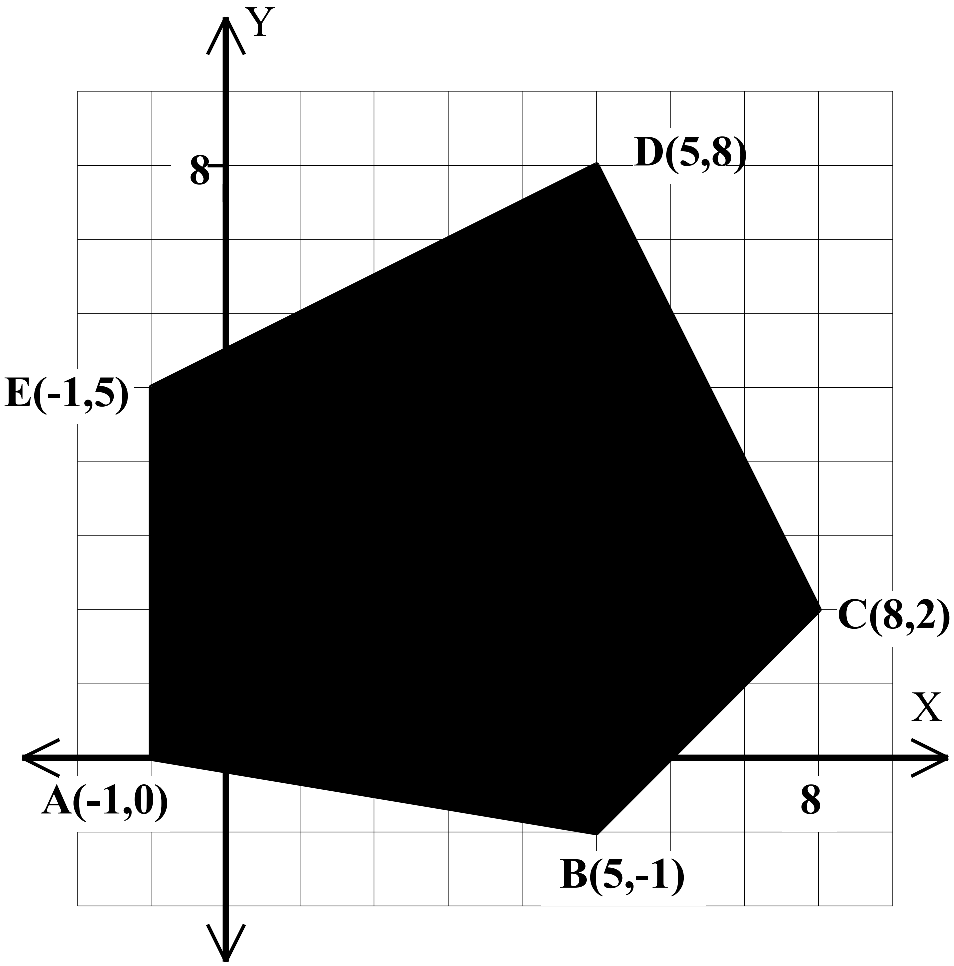

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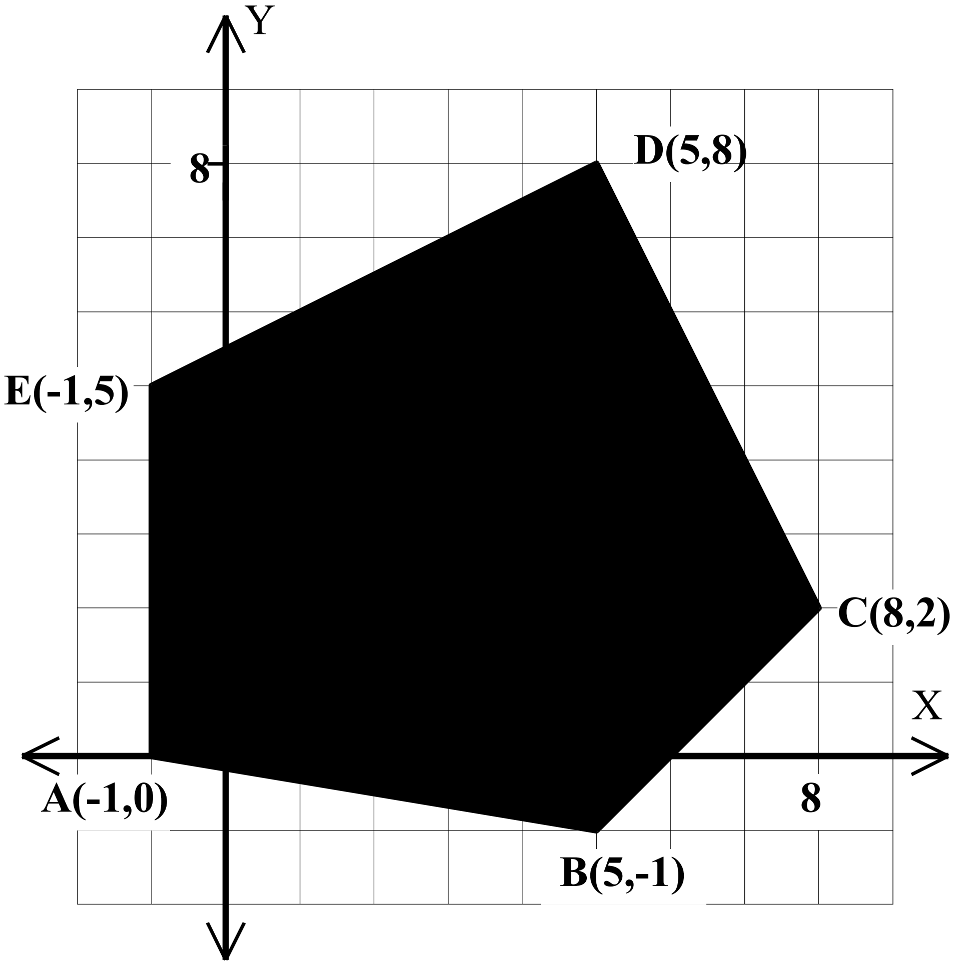

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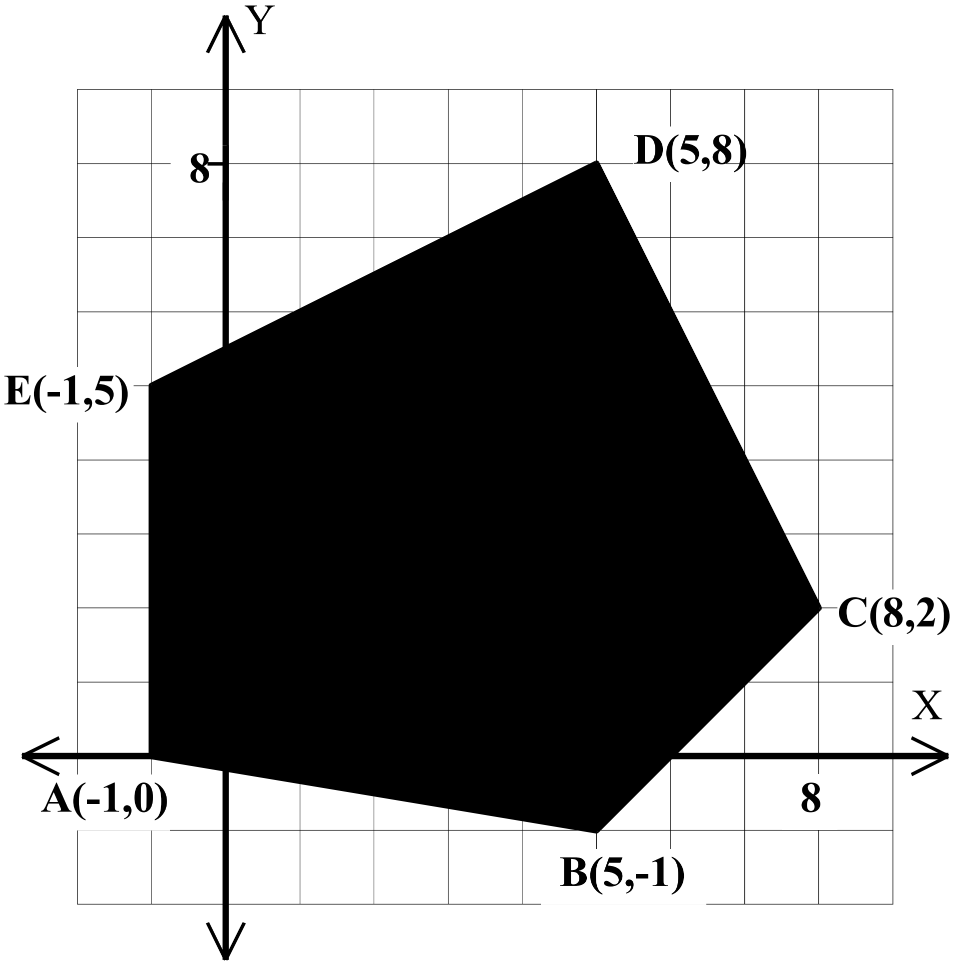
At A(-1,0)

Algebra II Class Worksheet #4 Unit 4



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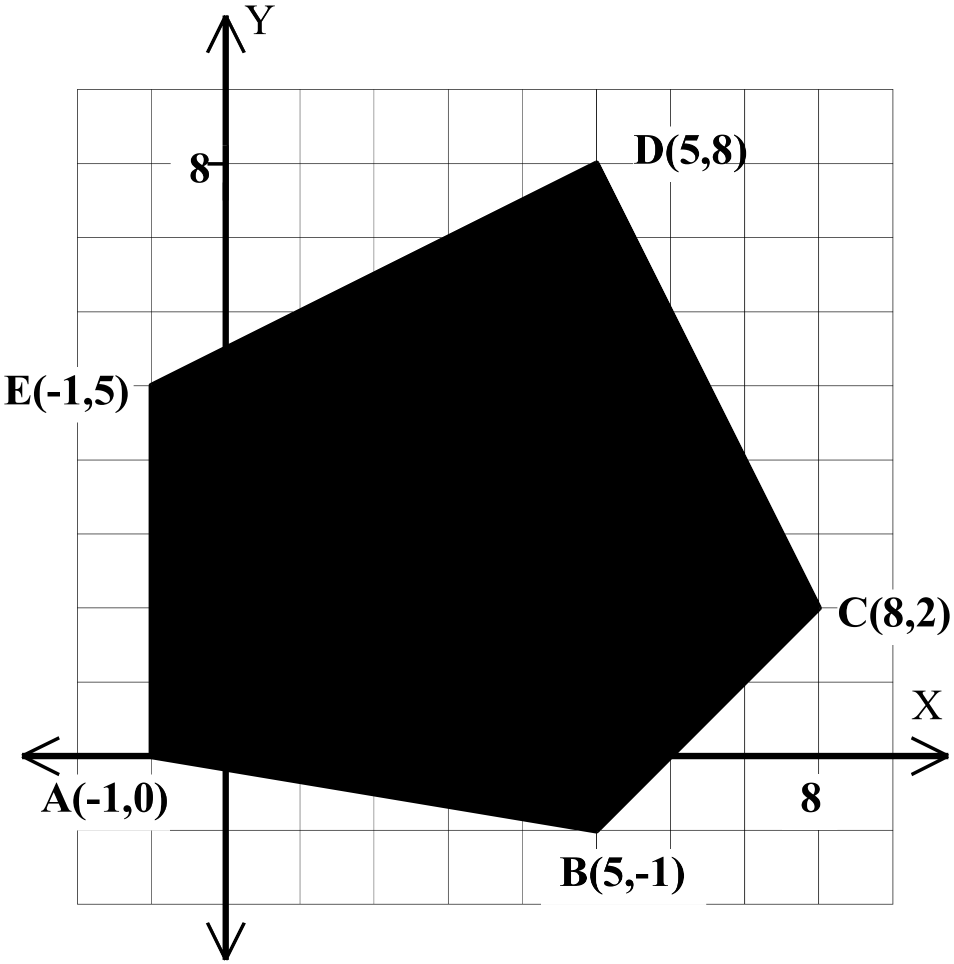
3. $T = x - 3y$

T_{max} = ______ at ________

T_{min} = ______ at ________

At A(-1,0) $\Longrightarrow$ T =

Algebra II Class Worksheet #4 Unit 4



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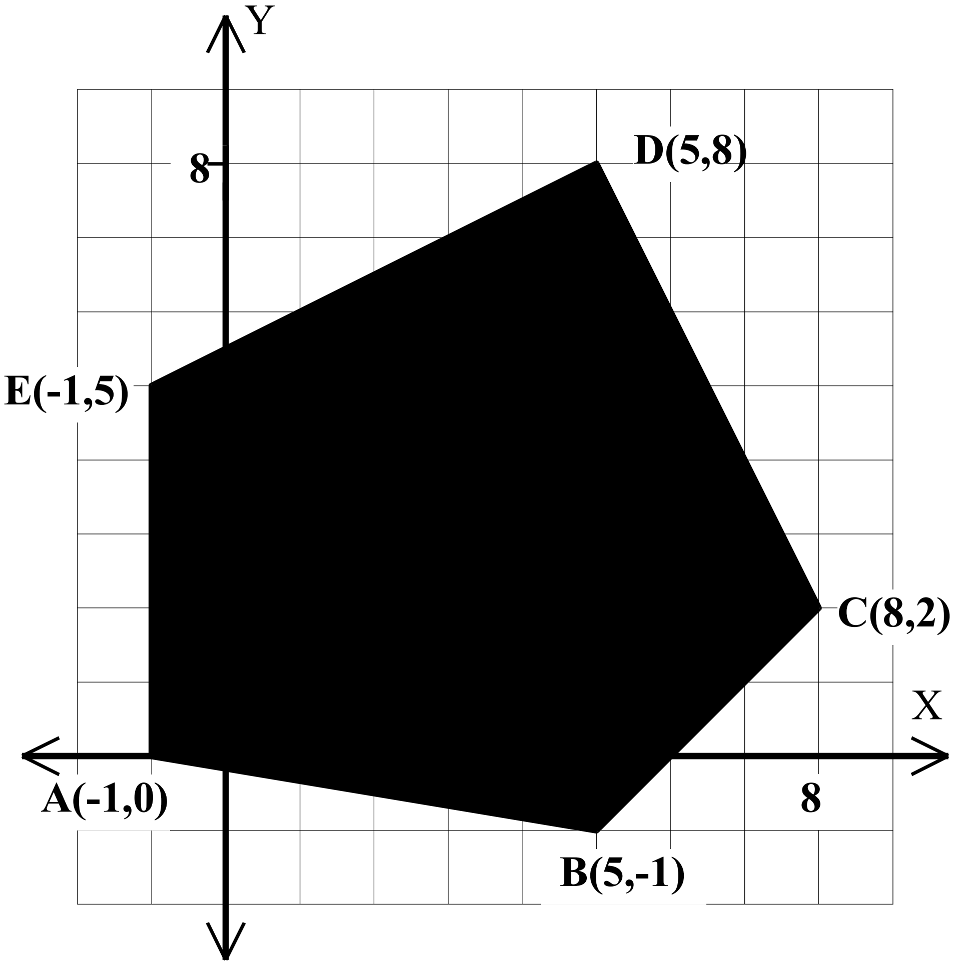
3. $T = x - 3y$

T_{max} = ______ at ________

T_{min} = ______ at ________

At A(-1,0) $\Longrightarrow$ T = -1

Algebra II Class Worksheet #4 Unit 4



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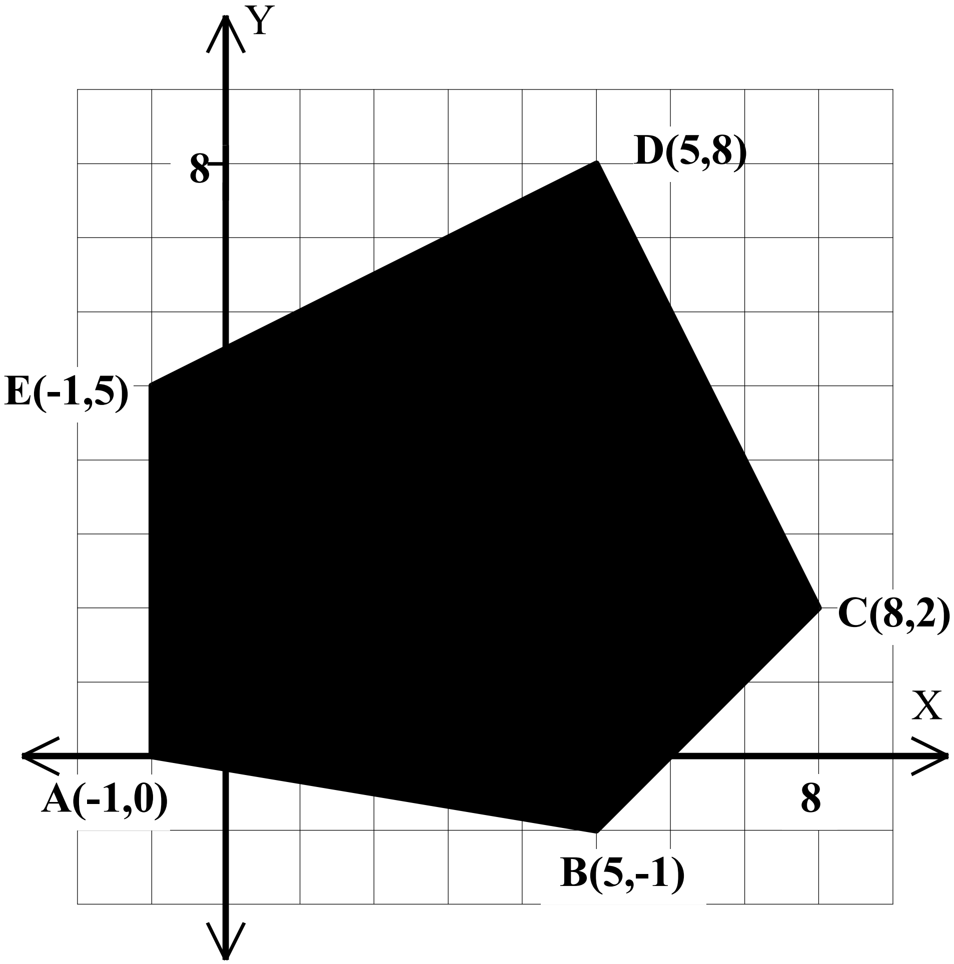
3. $T = x - 3y$

$T_{max} =$ ______ at ________

$T_{min} =$ ______ at ________

At A(-1,0) $\Longrightarrow$ $T = -1 -$

Algebra II Class Worksheet #4 Unit 4



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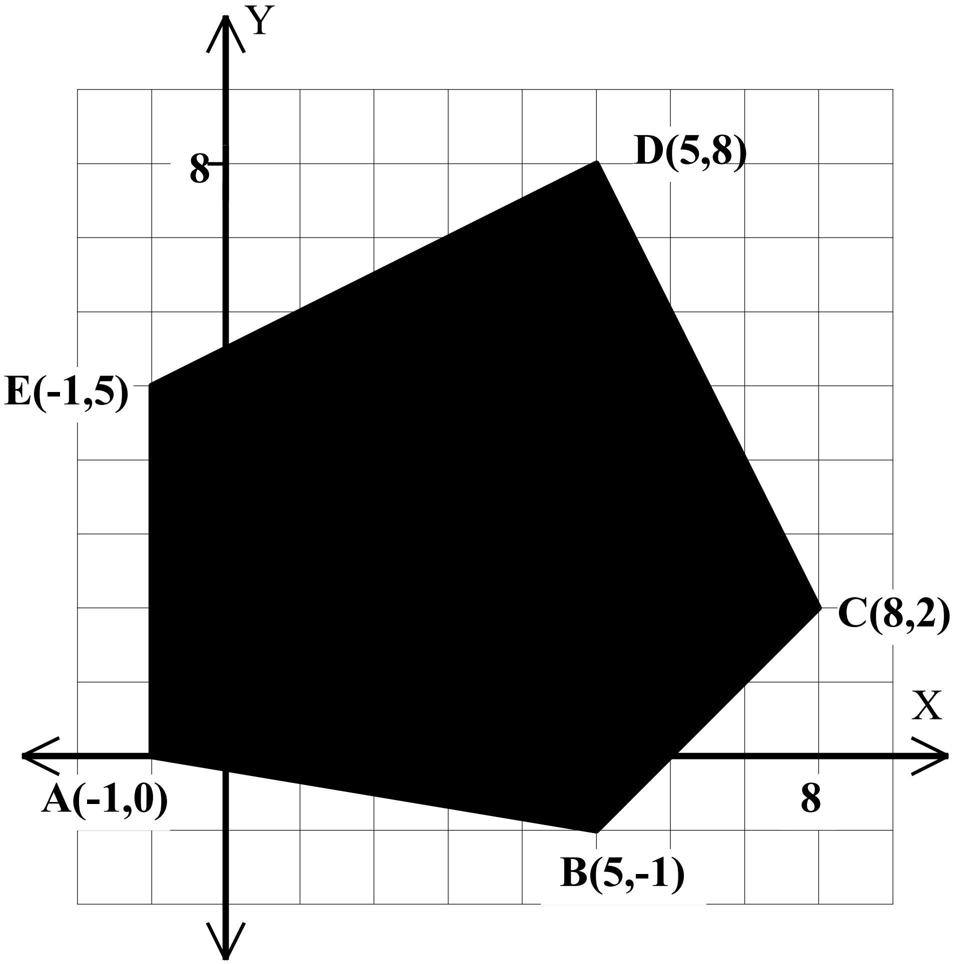

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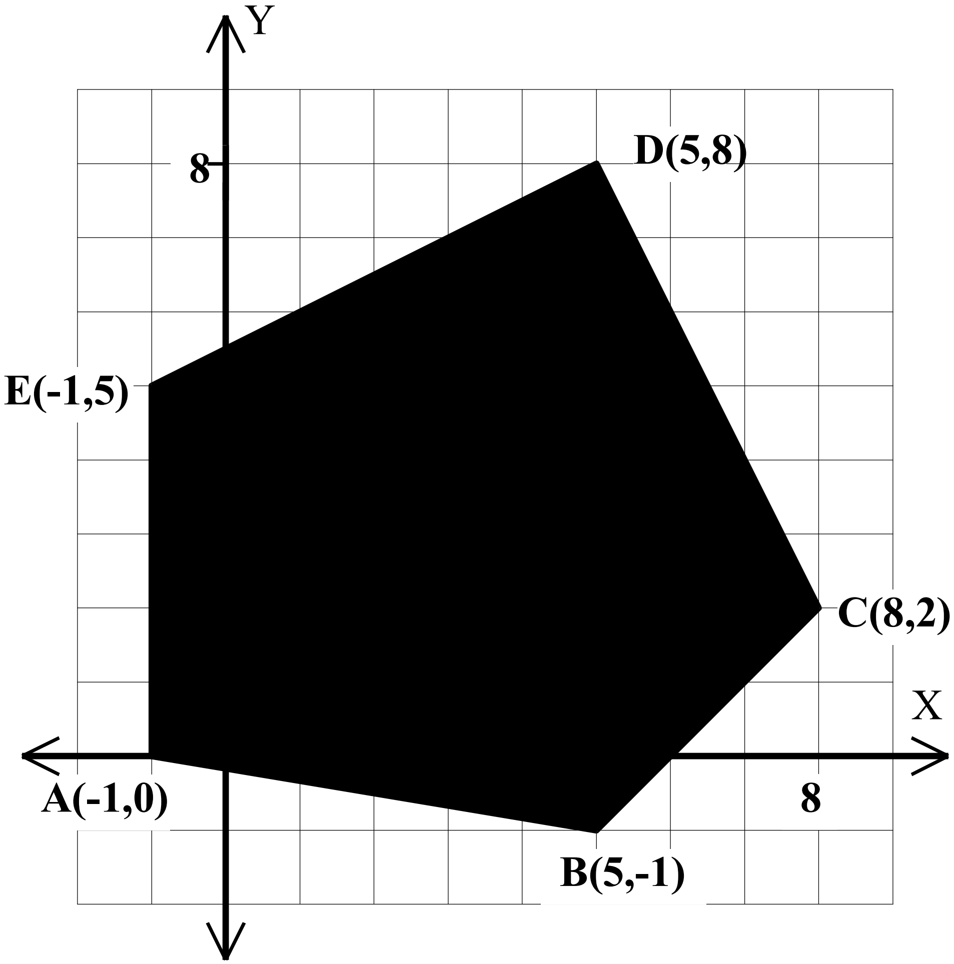
Algebra II Class Worksheet #4 Unit 4



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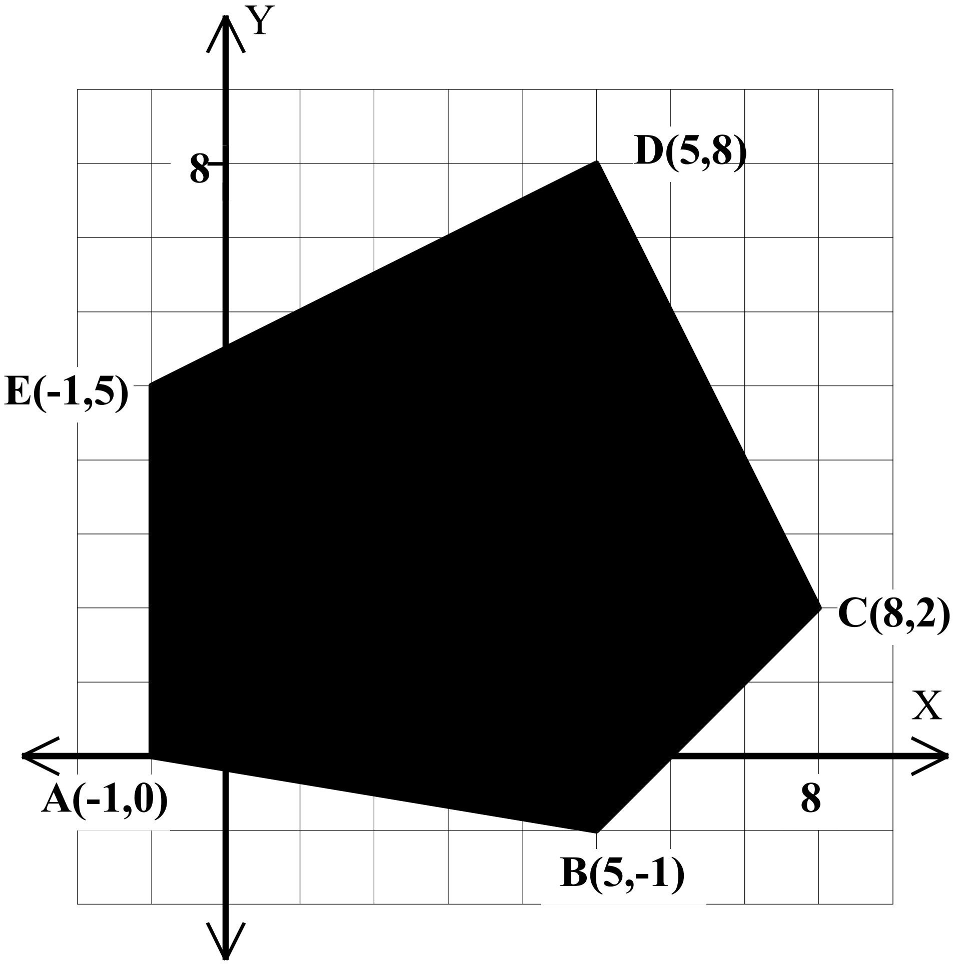
Algebra II   Class Worksheet #4   Unit 4



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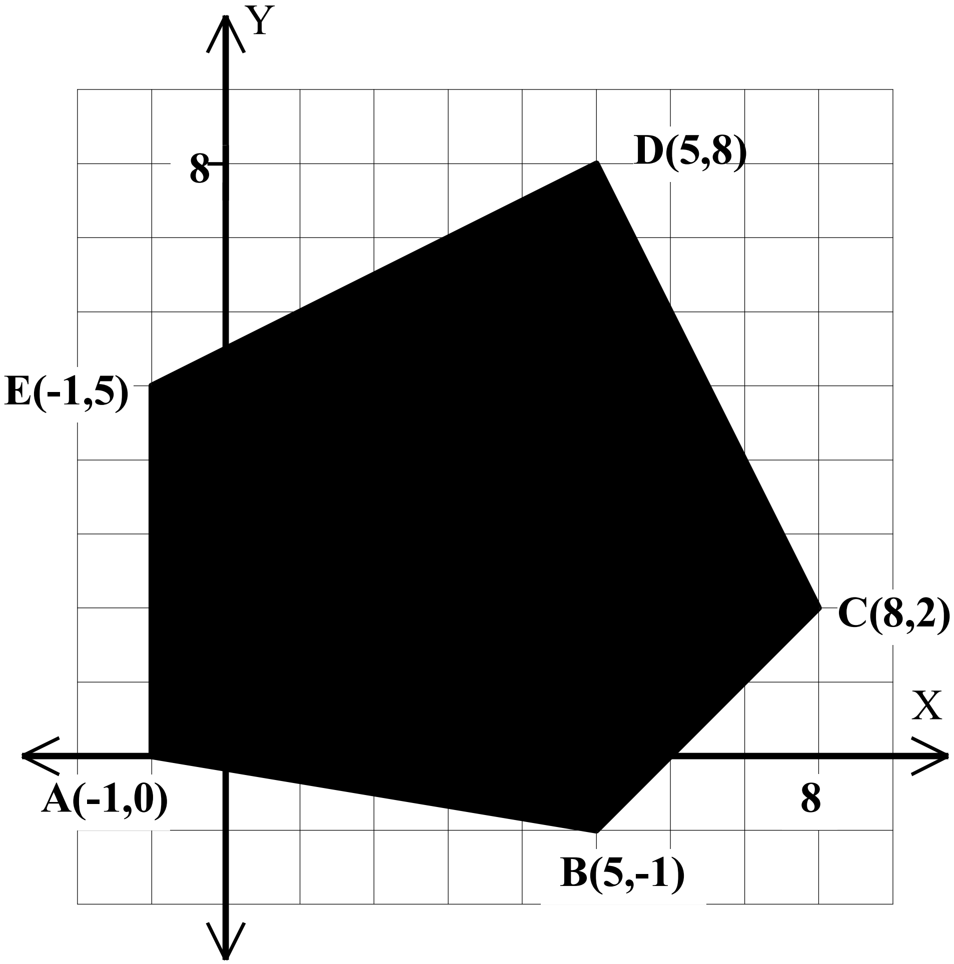
At B(5,-1)

Algebra II Class Worksheet #4 Unit 4



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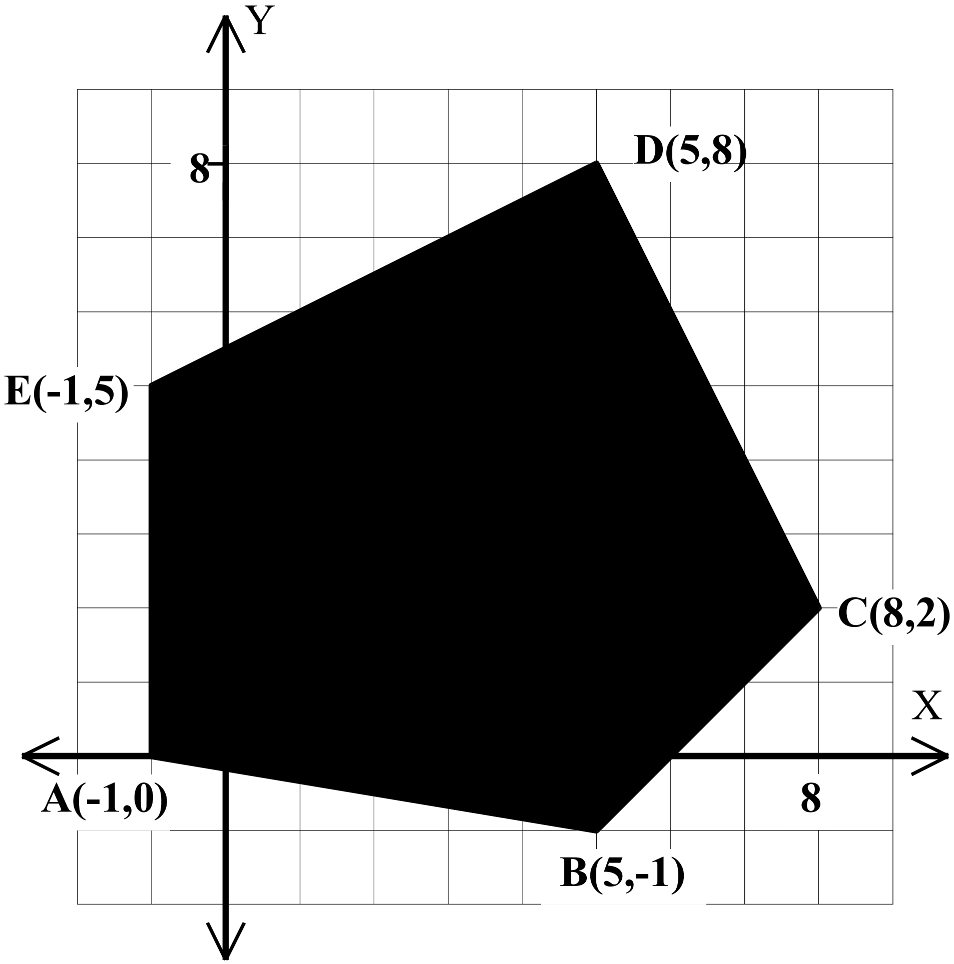
At B(5,-1) $\Rightarrow$ T =

Algebra II Class Worksheet #4 Unit 4



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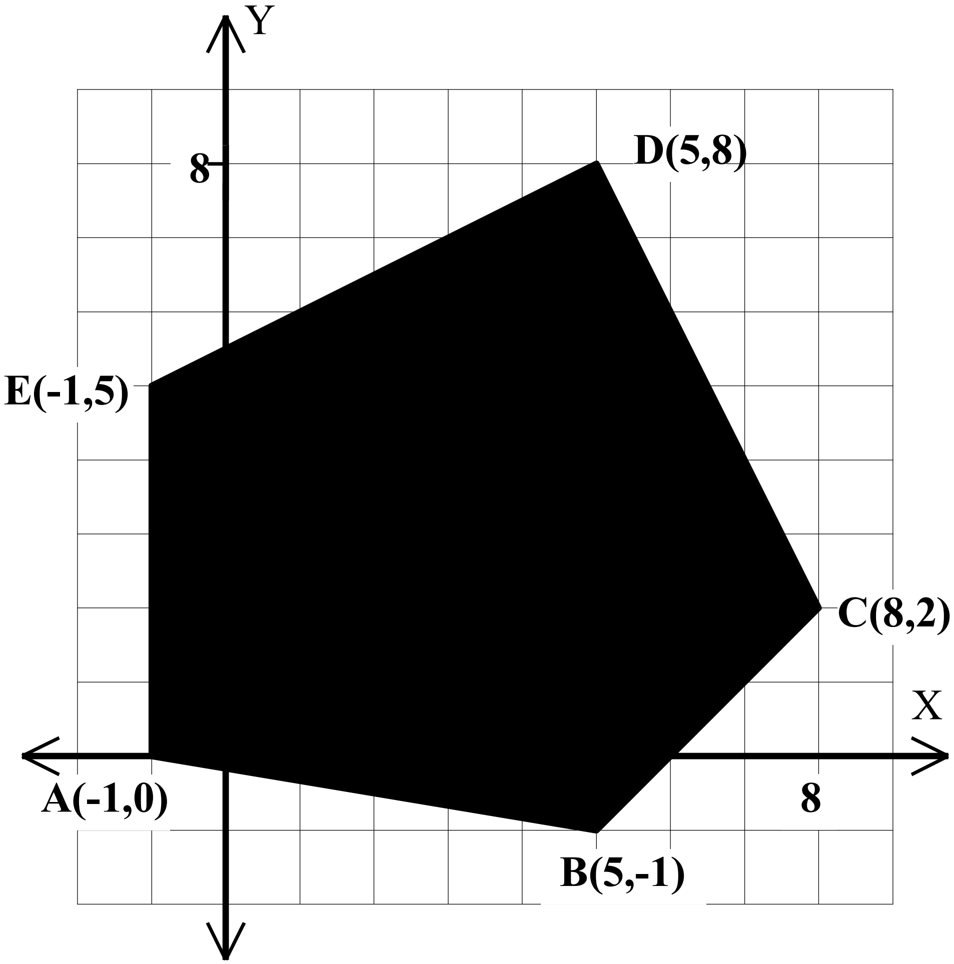
At A(-1,0) $\Longrightarrow$ T = -1 – 0 = **-1**

At B(5,-1) $\Longrightarrow$ T = 5

Algebra II Class Worksheet #4 Unit 4



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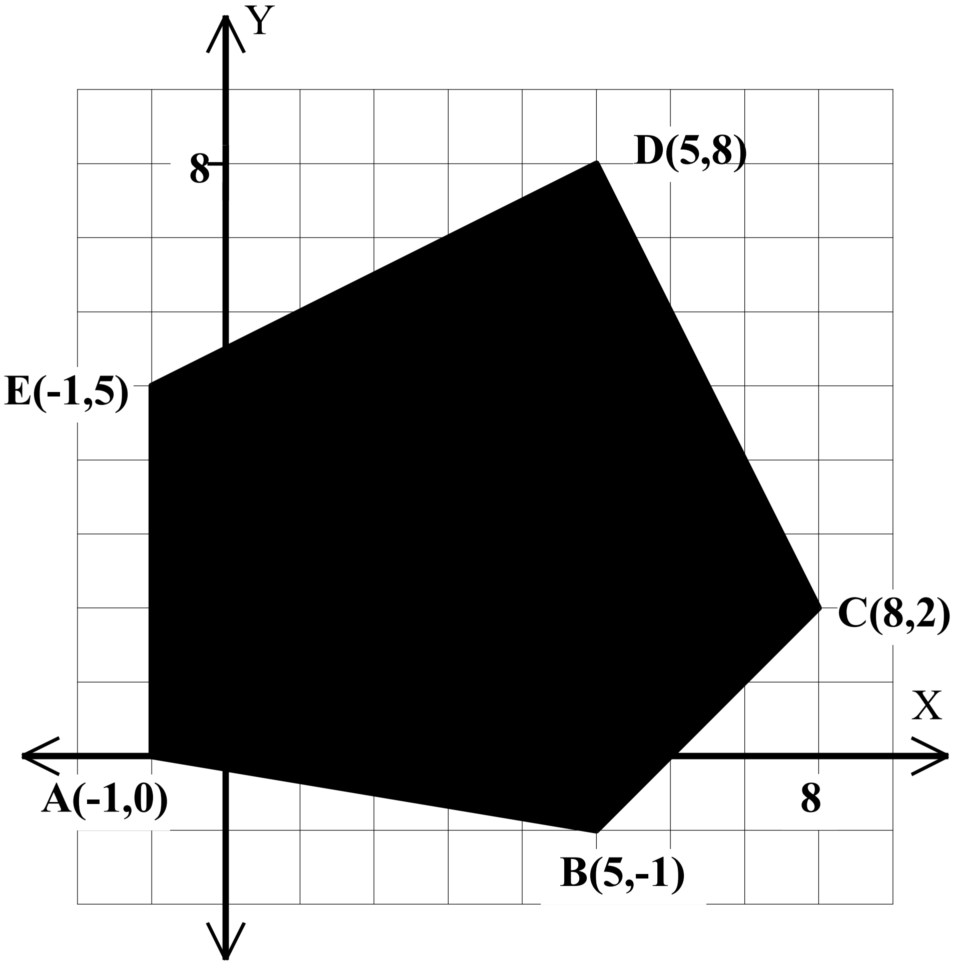
At B(5,-1) $\Rightarrow$ $T = 5 -$

Algebra II Class Worksheet #4 Unit 4



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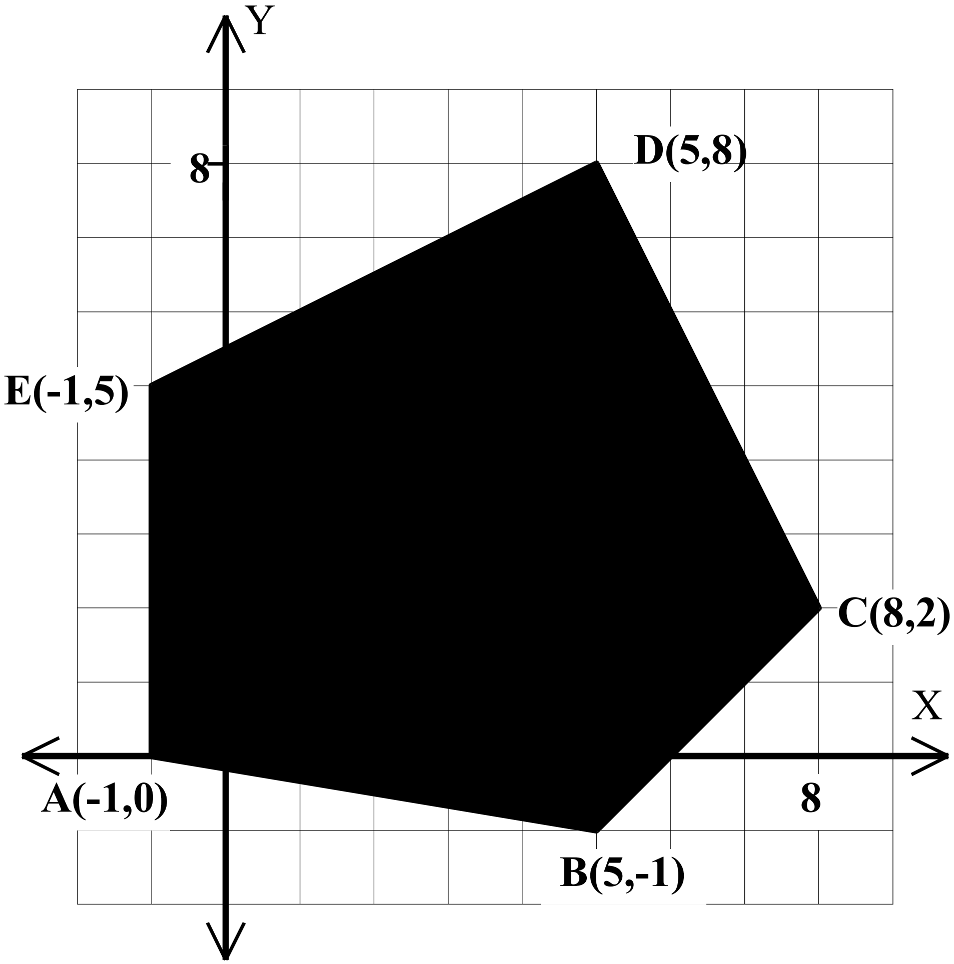
Algebra II Class Worksheet #4 Unit 4



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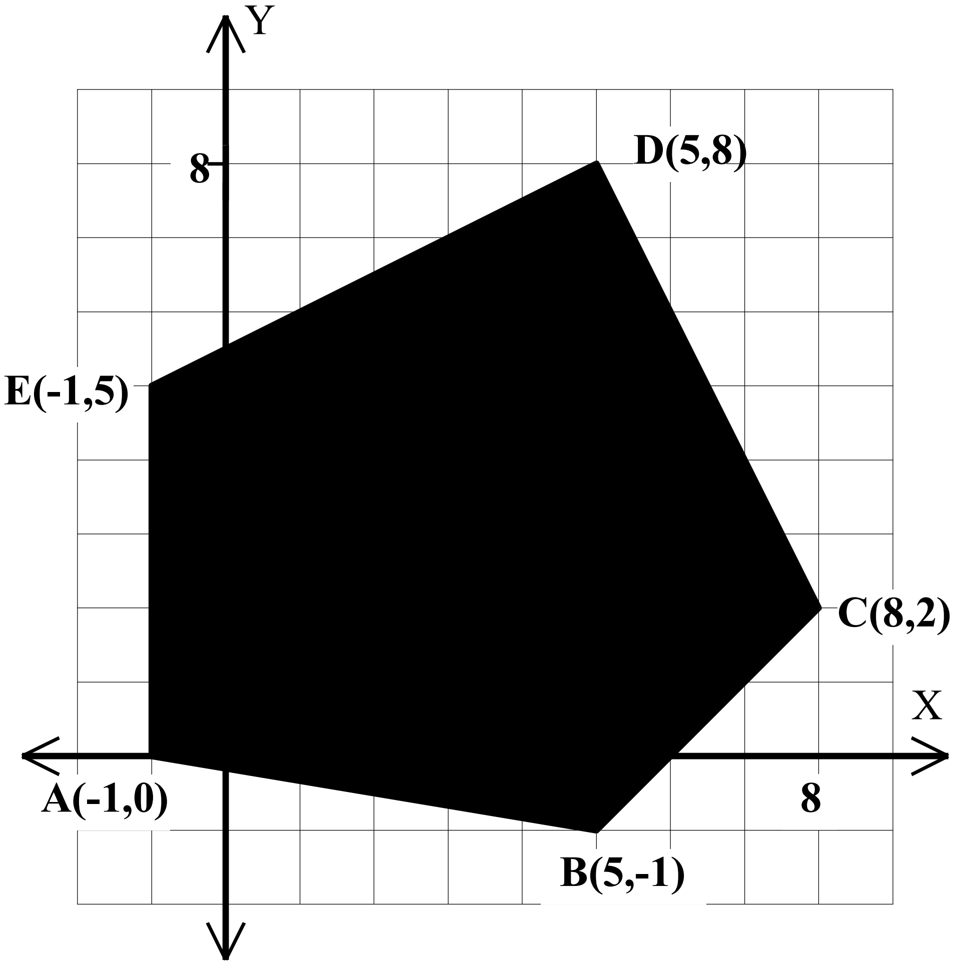

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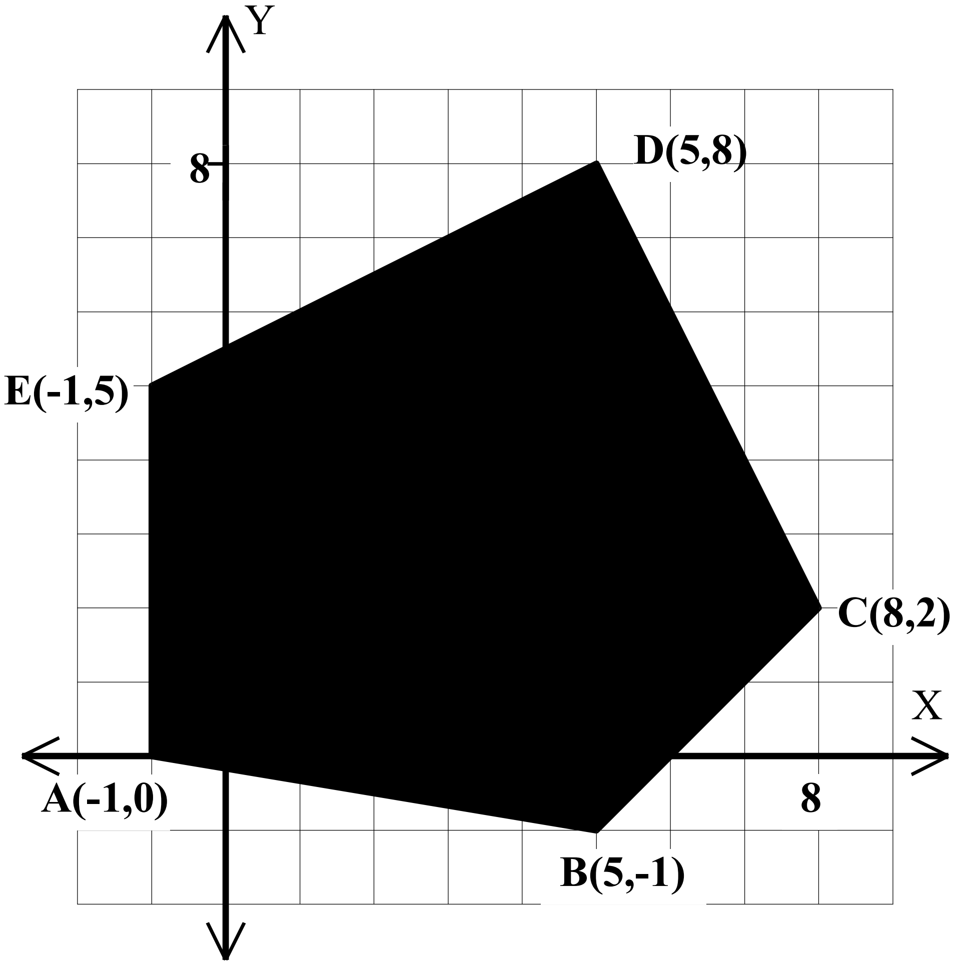
Algebra II Class Worksheet #4 Unit 4



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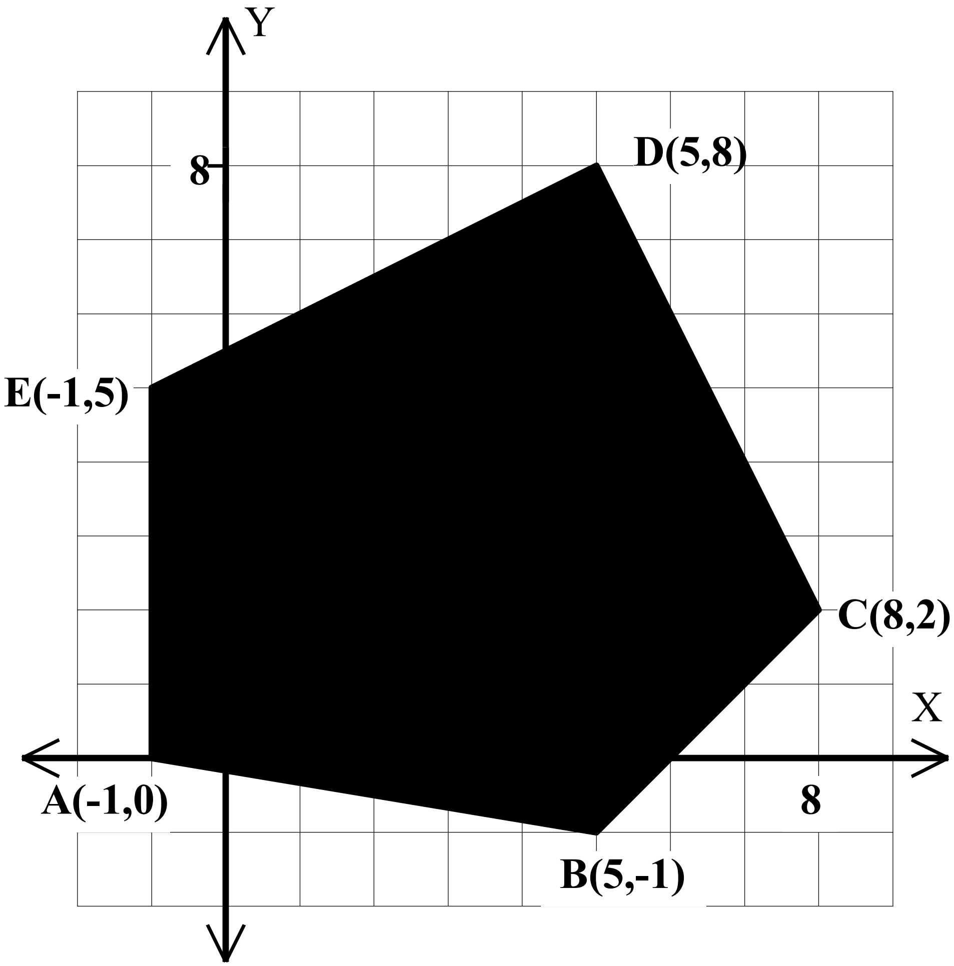

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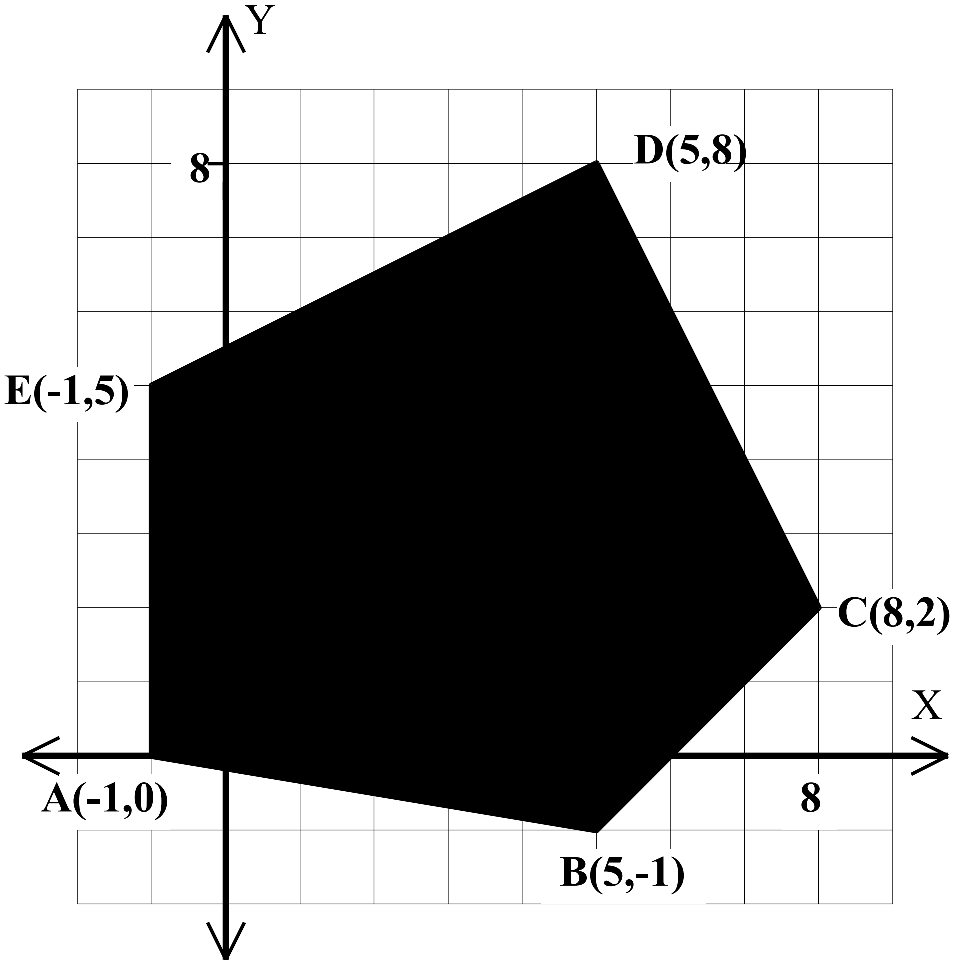

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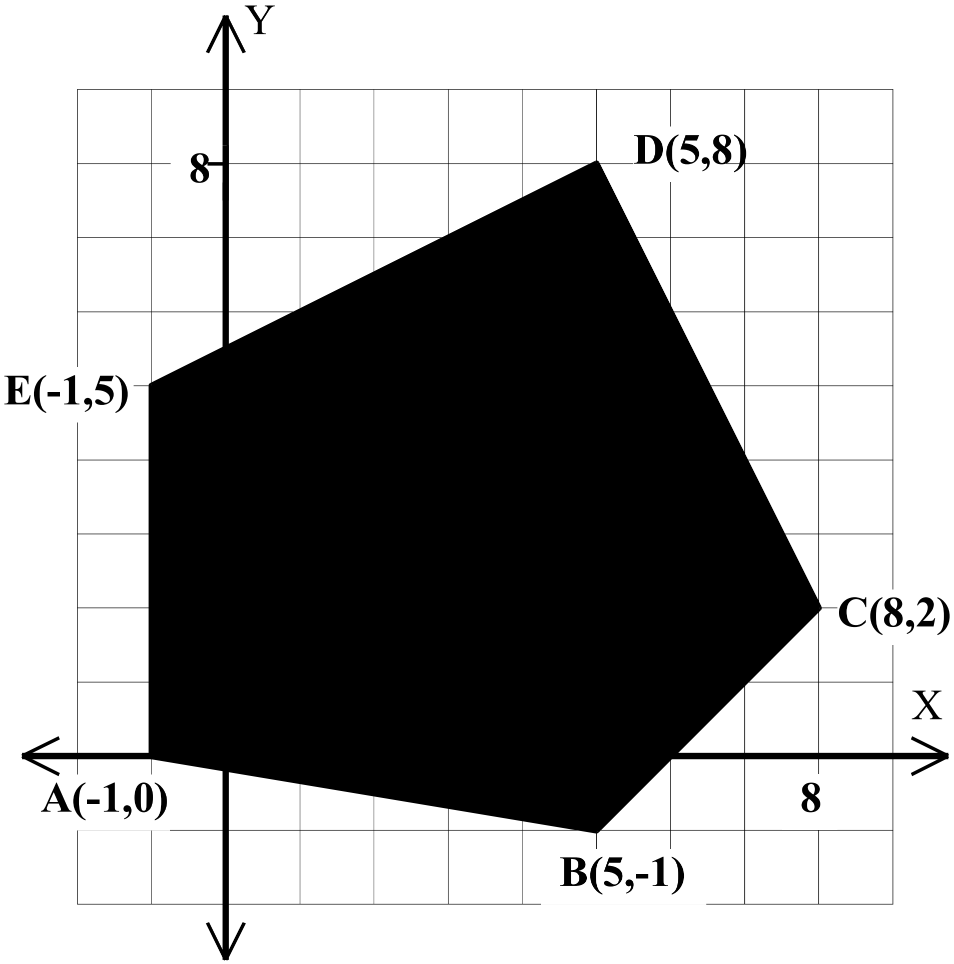

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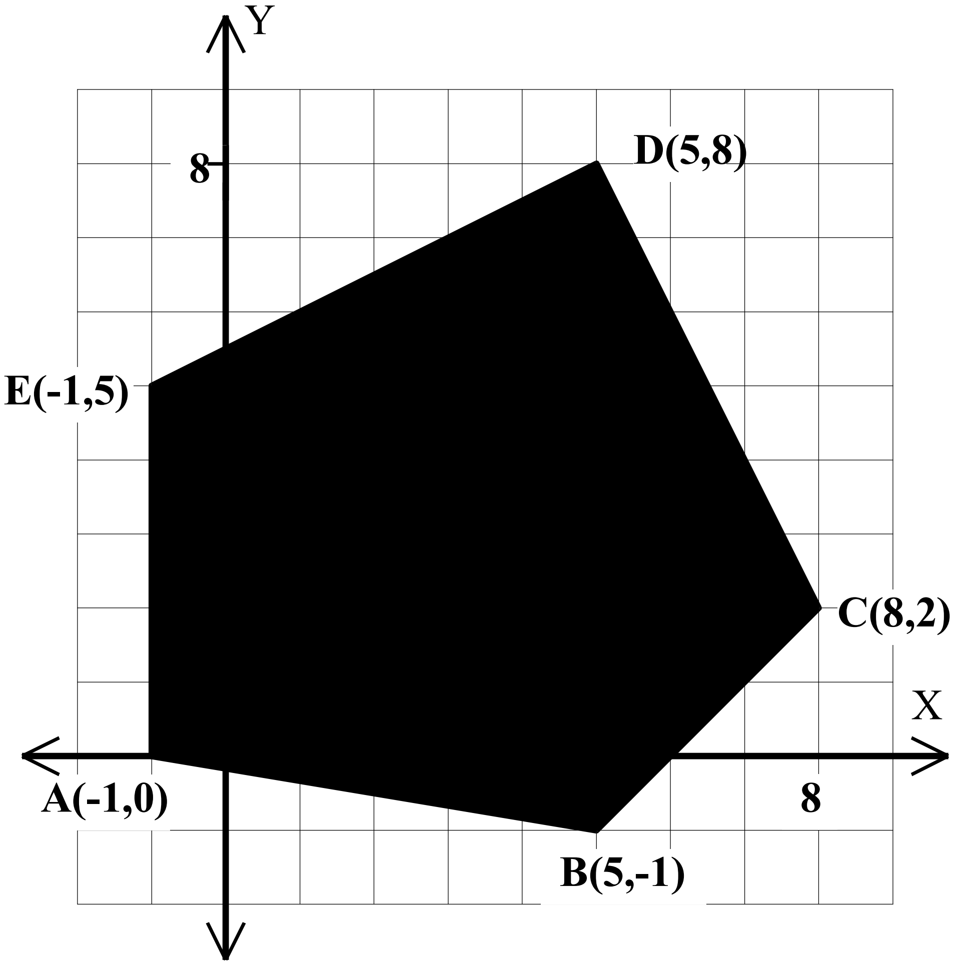
Algebra II   Class Worksheet #4   Unit 4



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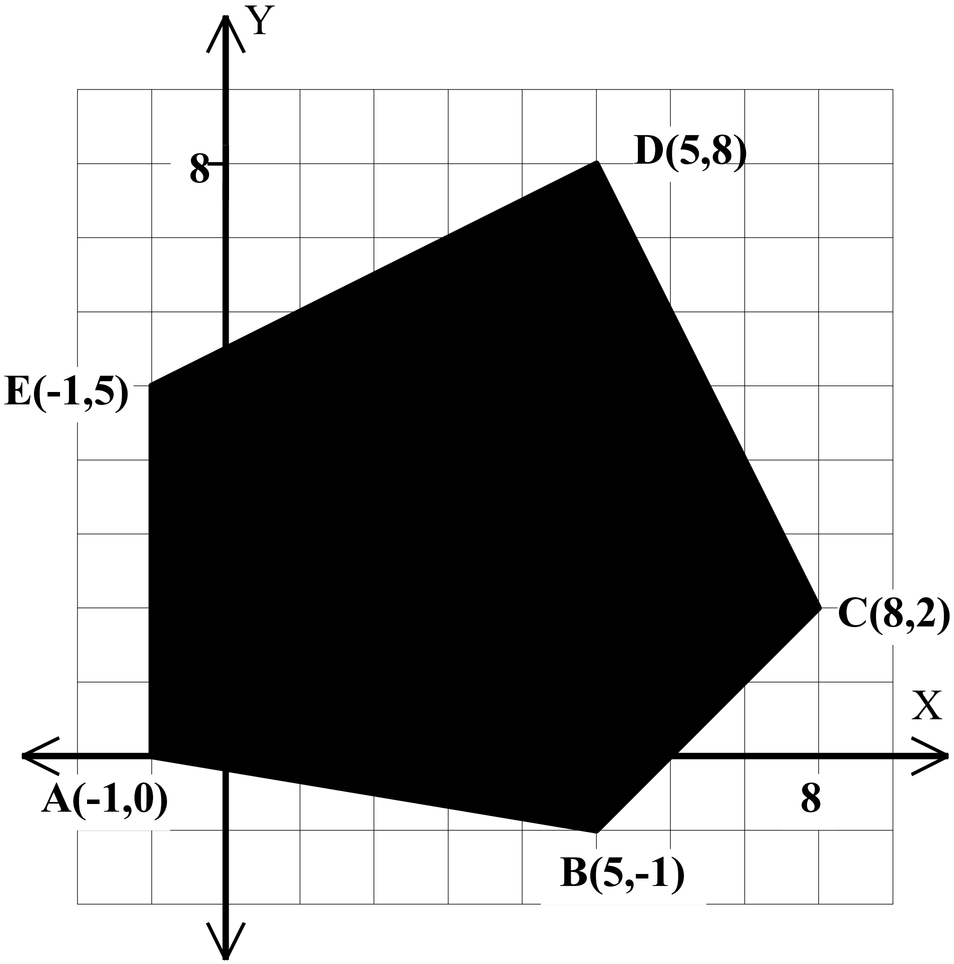
At C(8,2) $\Rightarrow$ $T = 8 - 6$

Algebra II Class Worksheet #4 Unit 4



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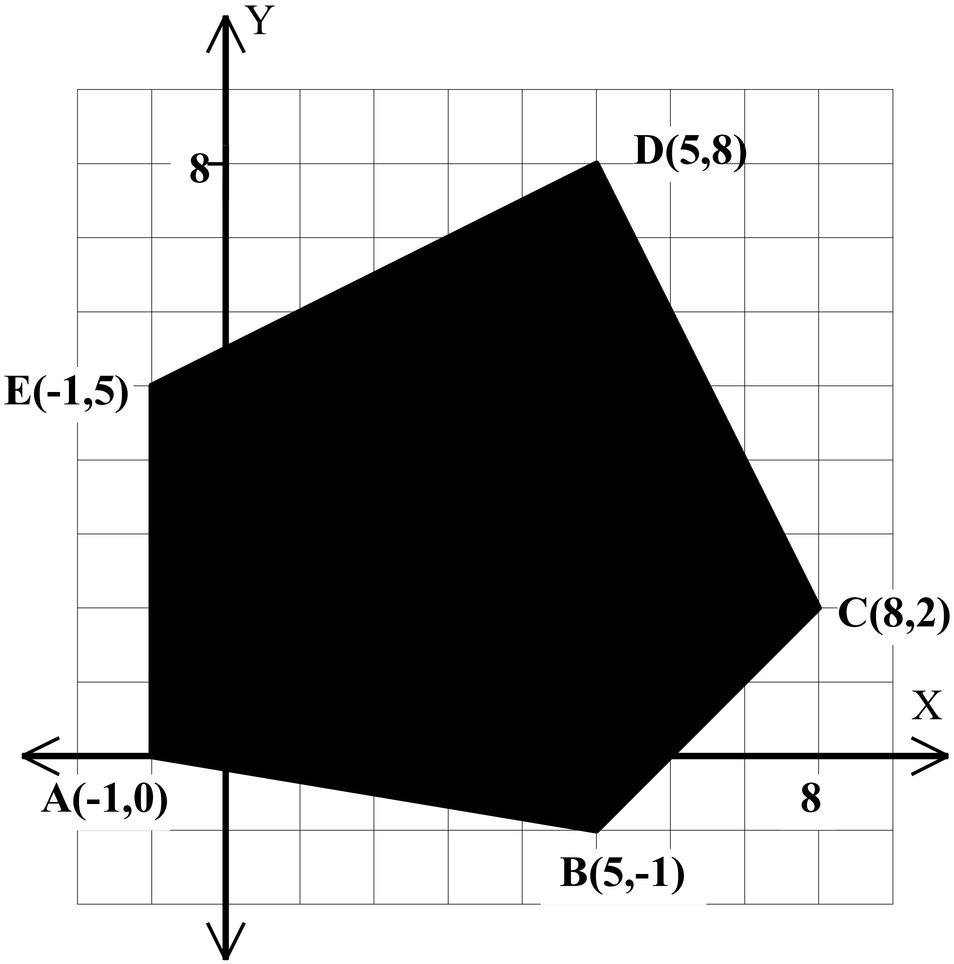

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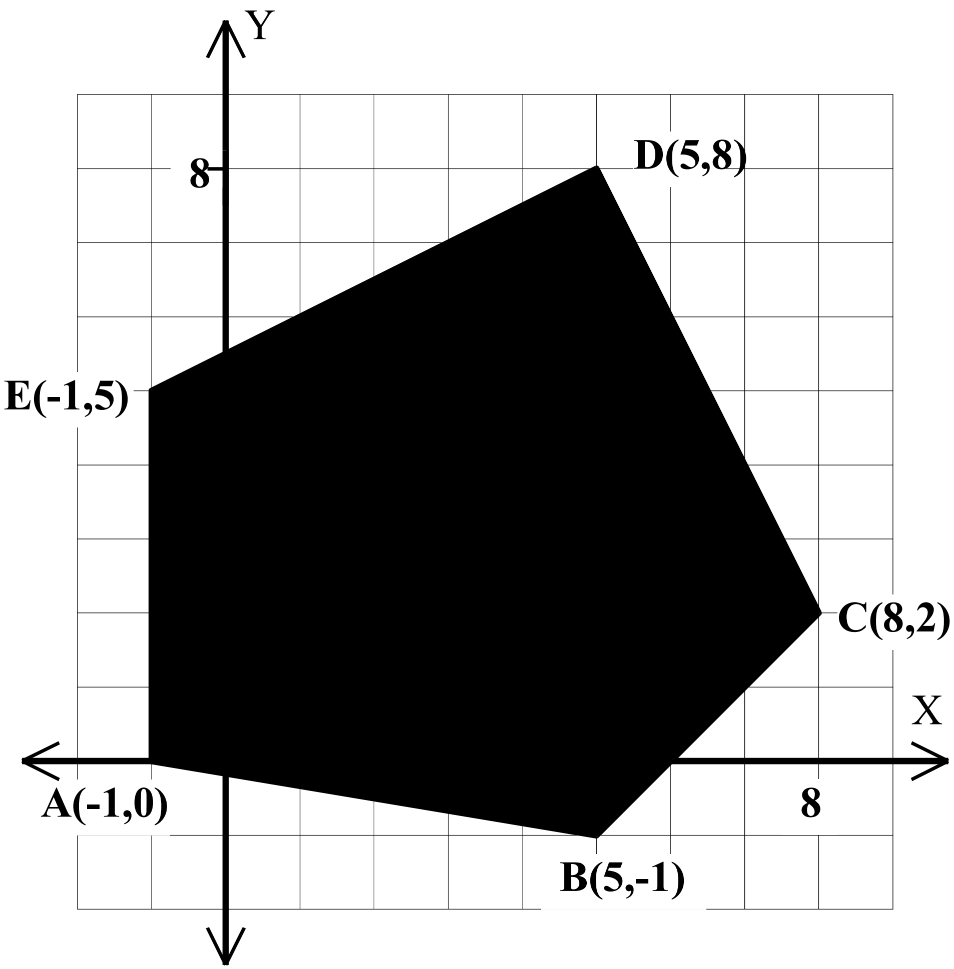

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At C(8,2) $\Longrightarrow$ $T = 8 - 6 = \mathbf{2}$

At D(5,8) $\Longrightarrow$

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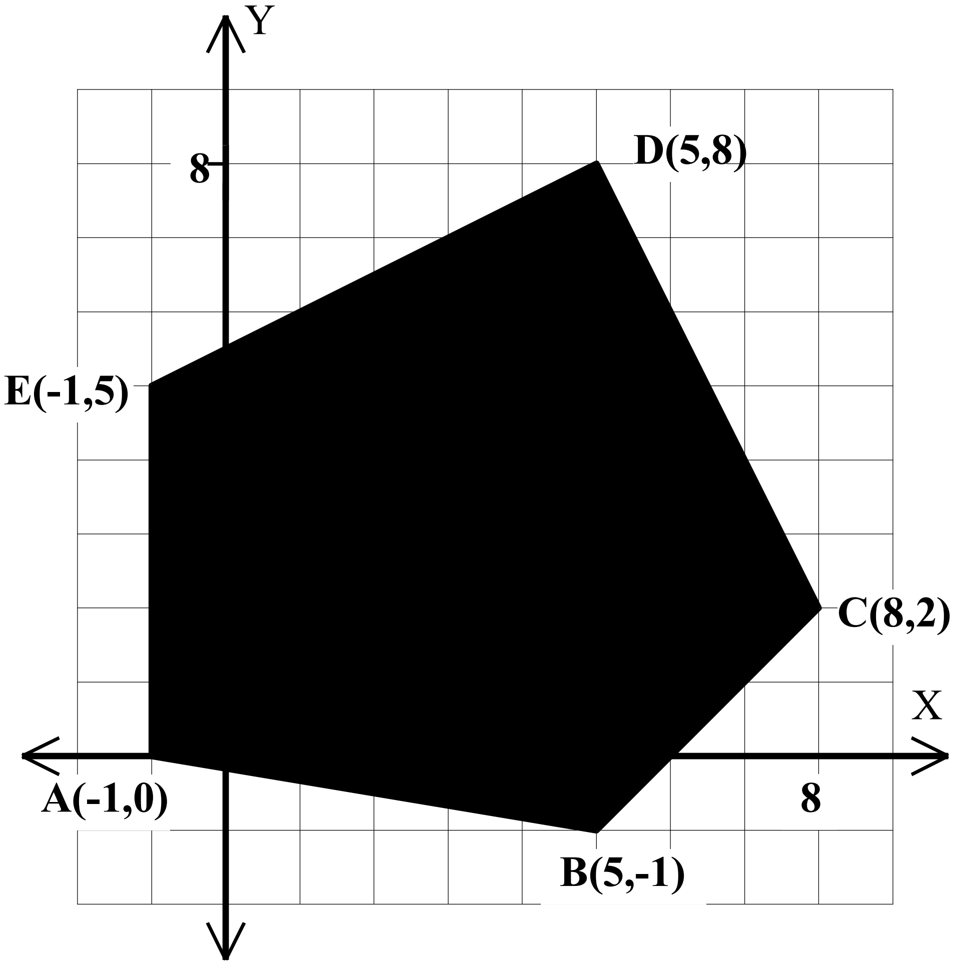

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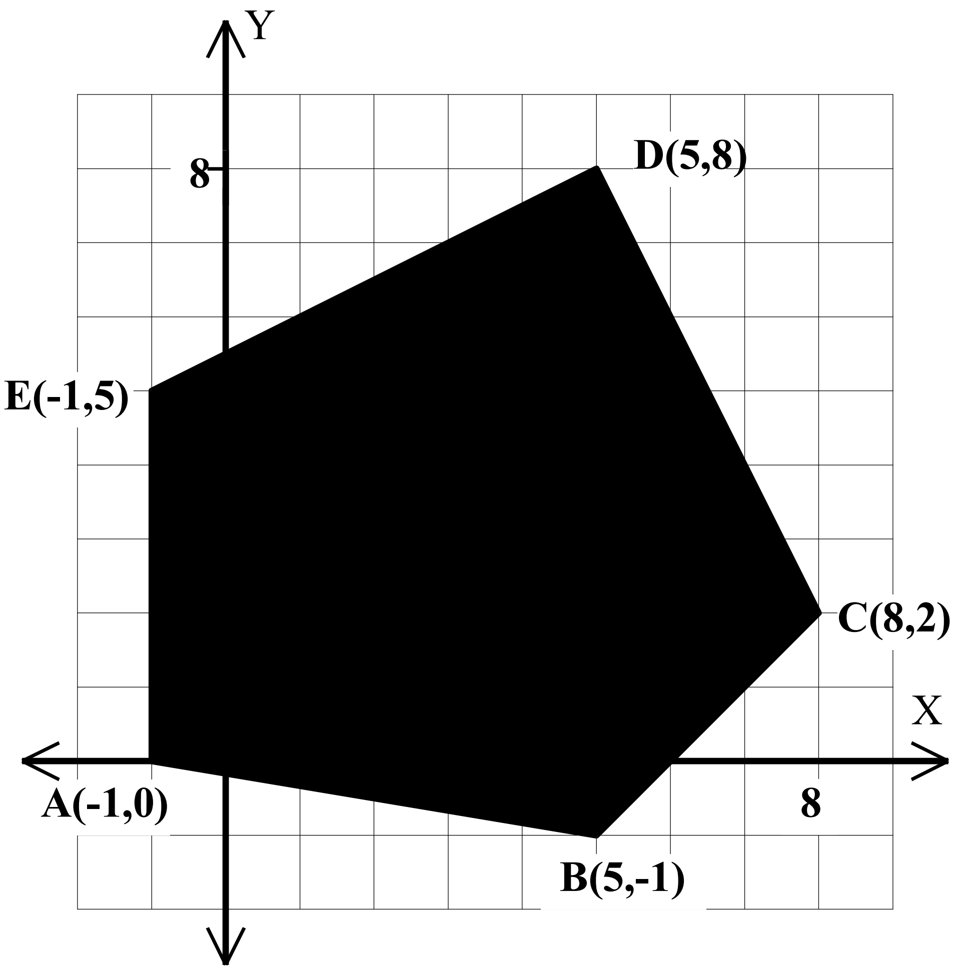
At C(8,2) $\Longrightarrow$ T = 8 – 6 = **2**

At D(5,8) $\Longrightarrow$ T =

Algebra II Class Worksheet #4 Unit 4



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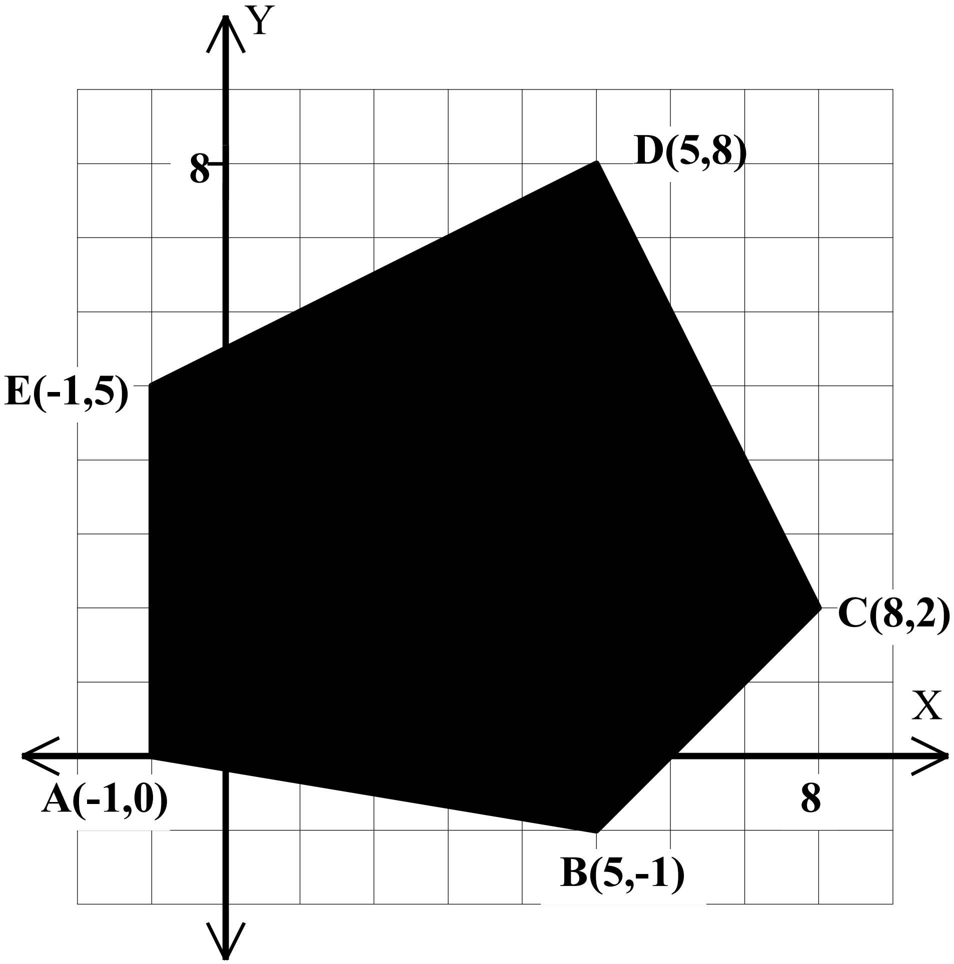
Algebra II Class Worksheet #4 Unit 4



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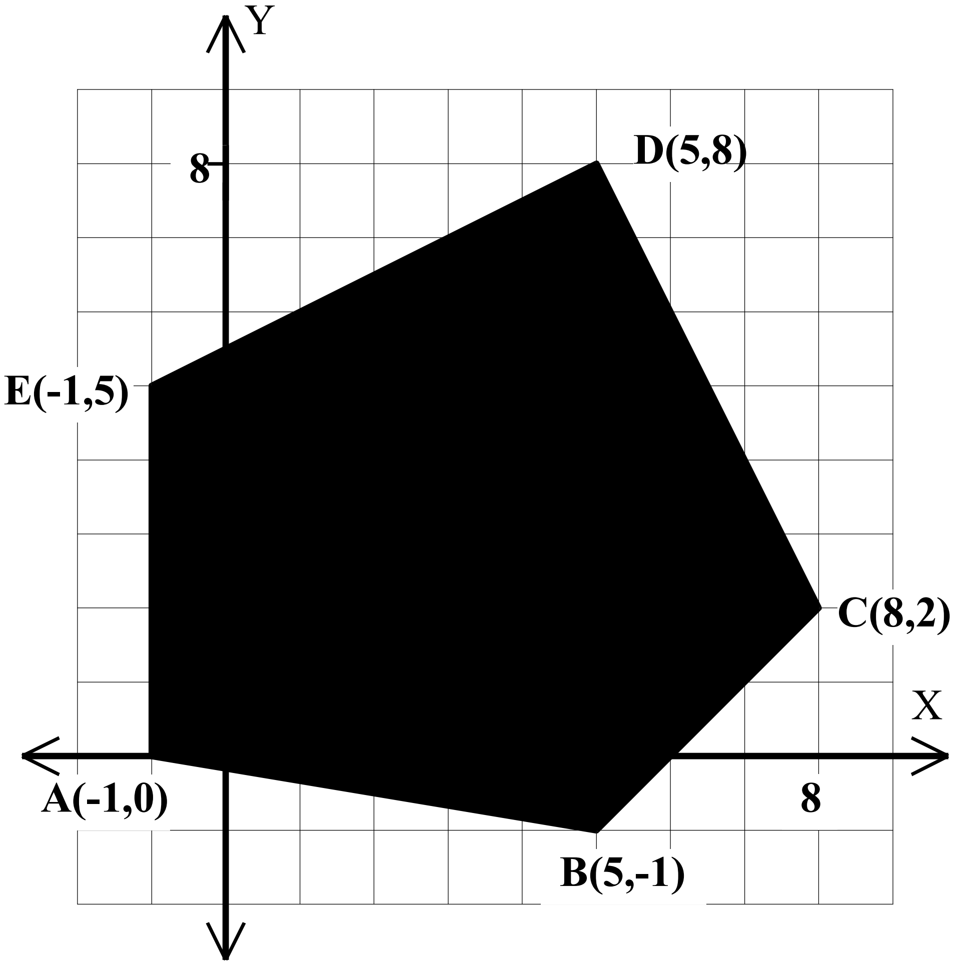

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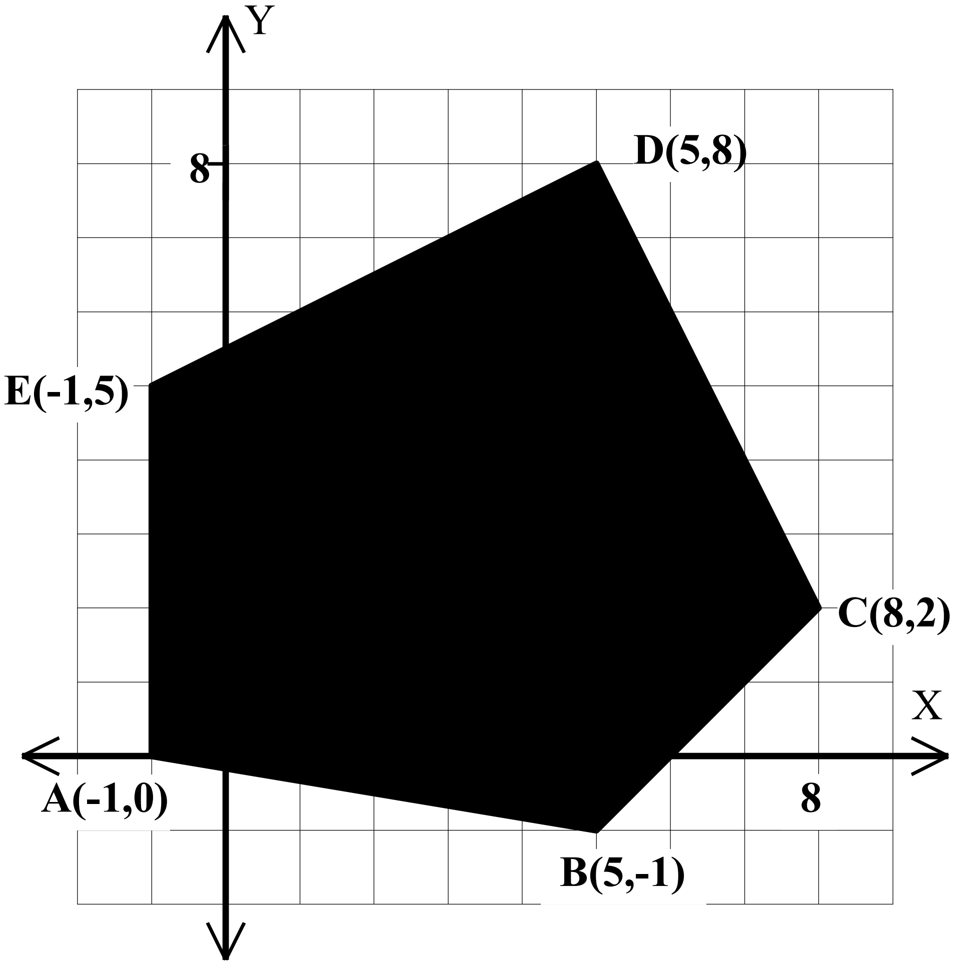

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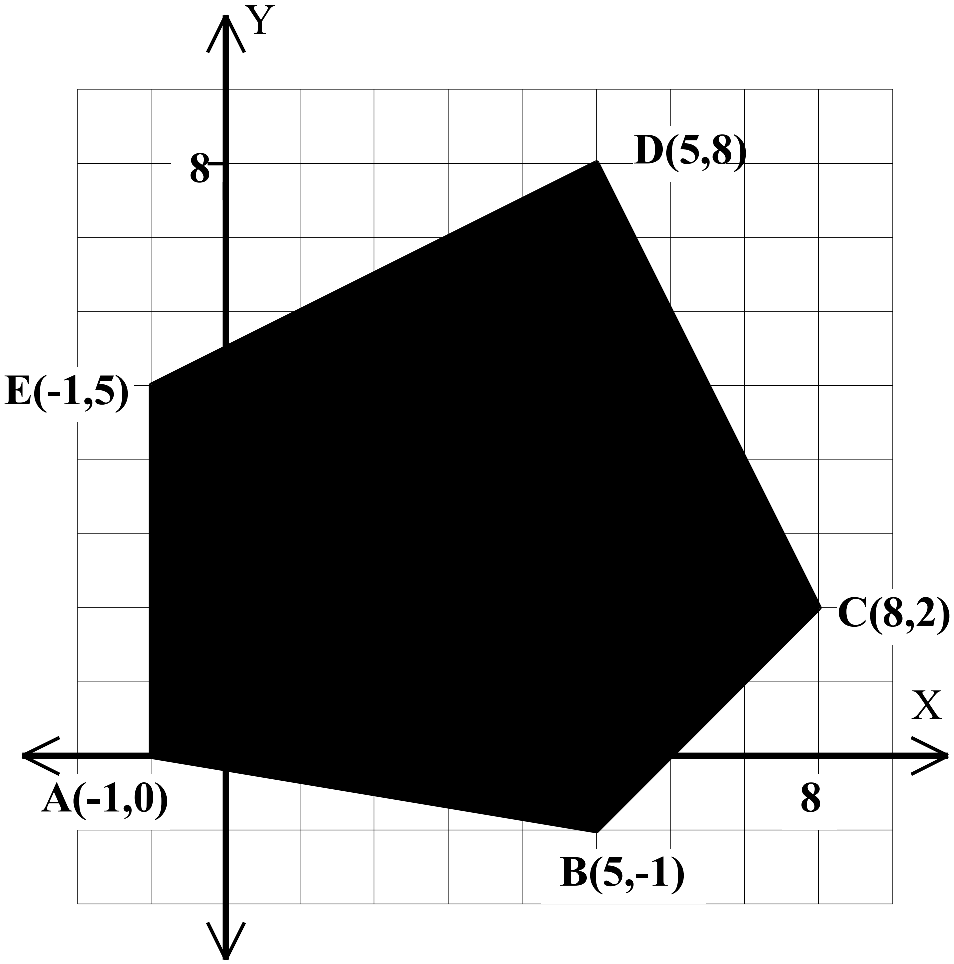

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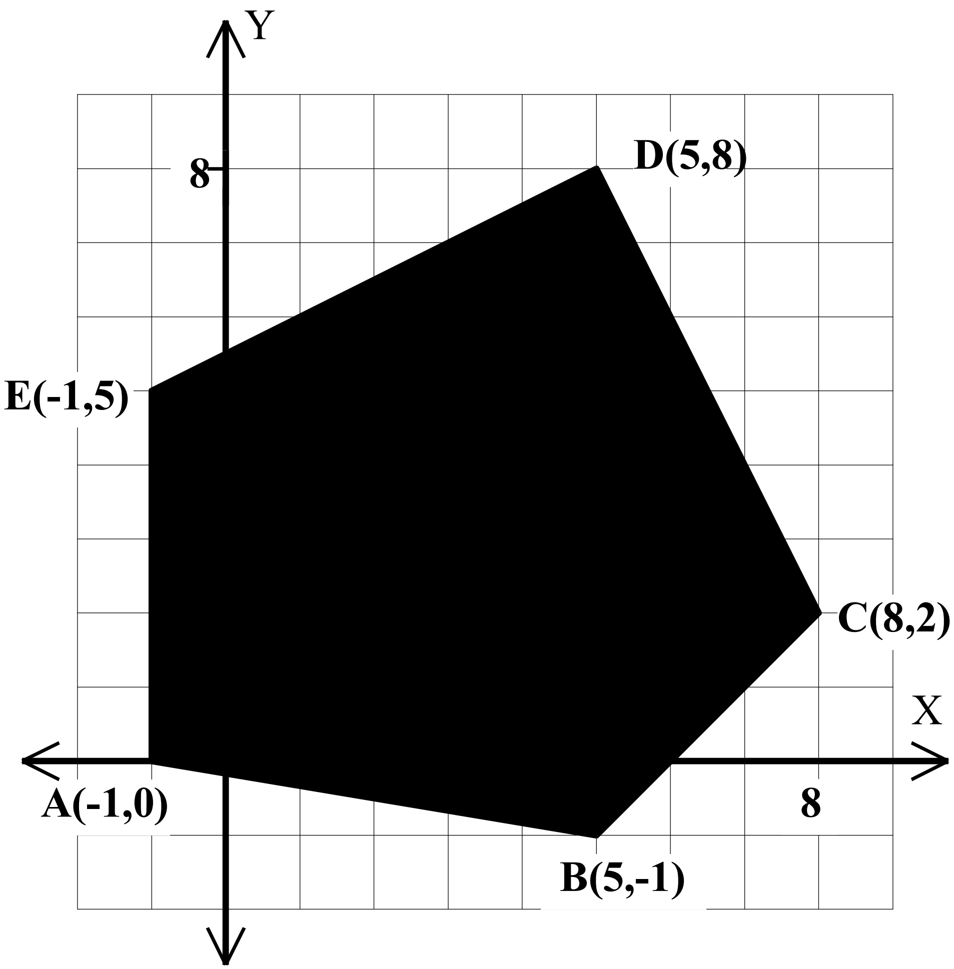

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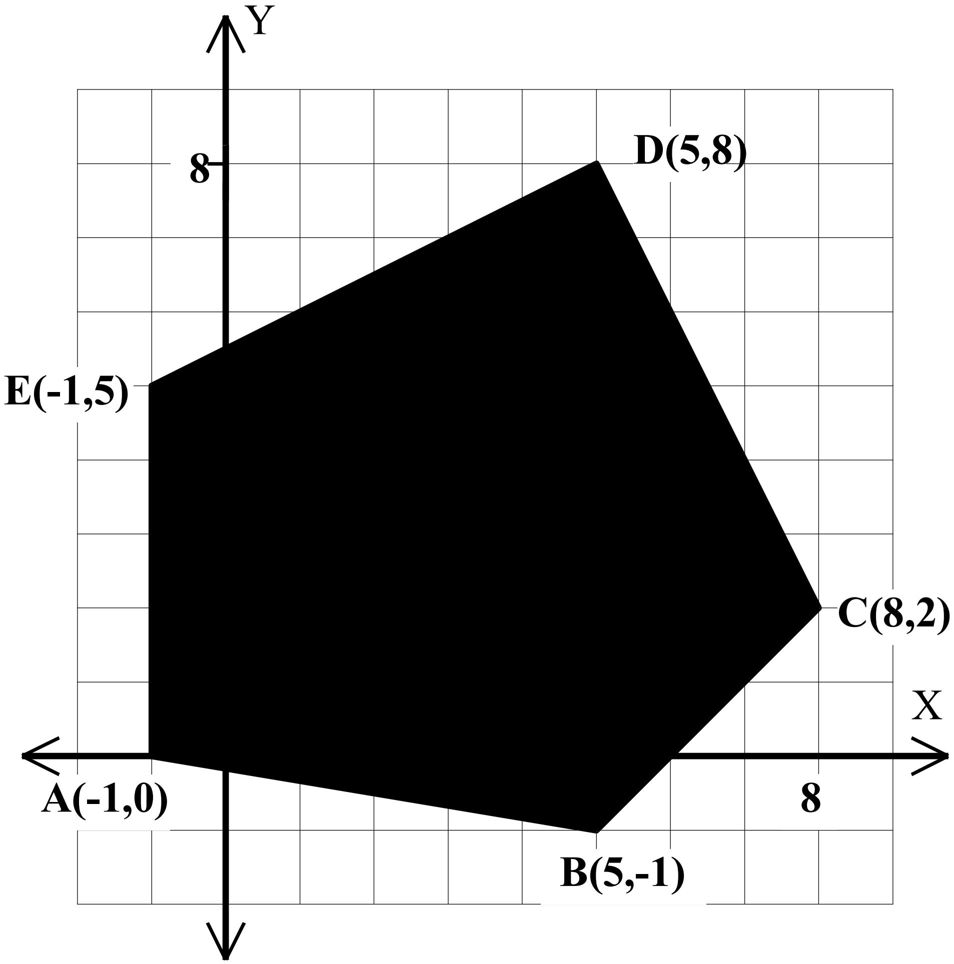

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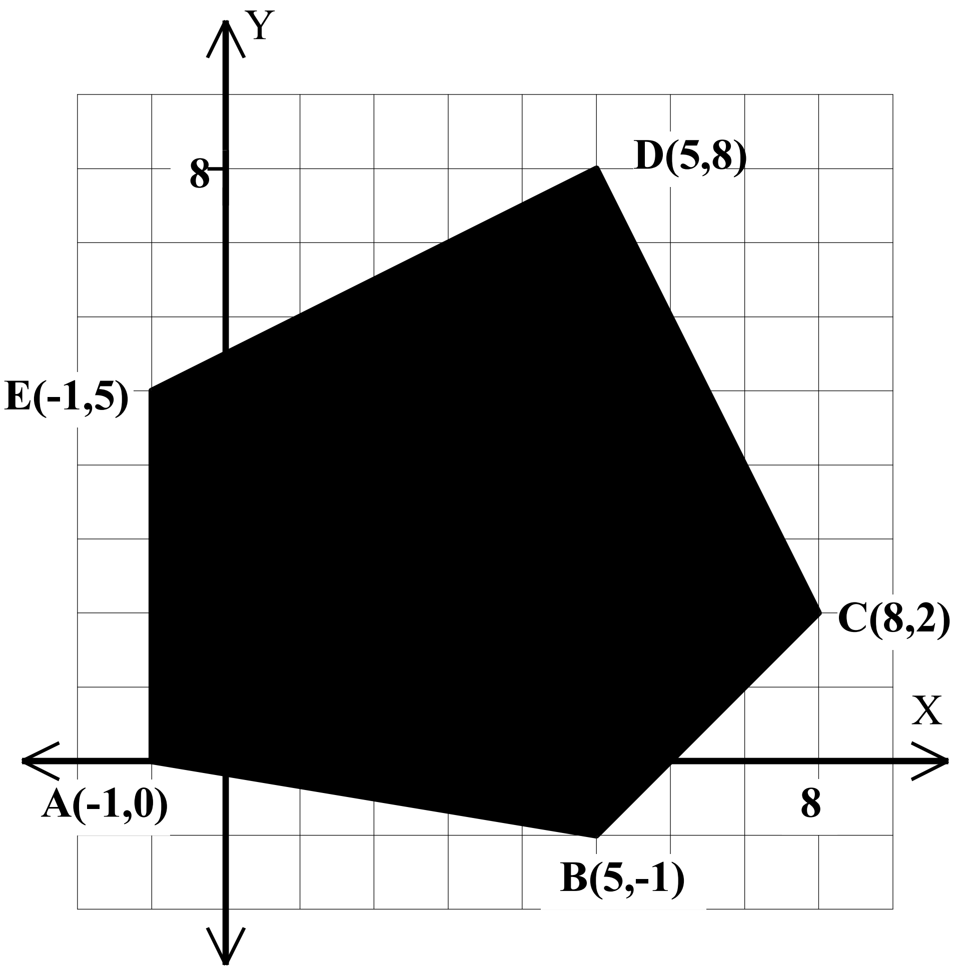

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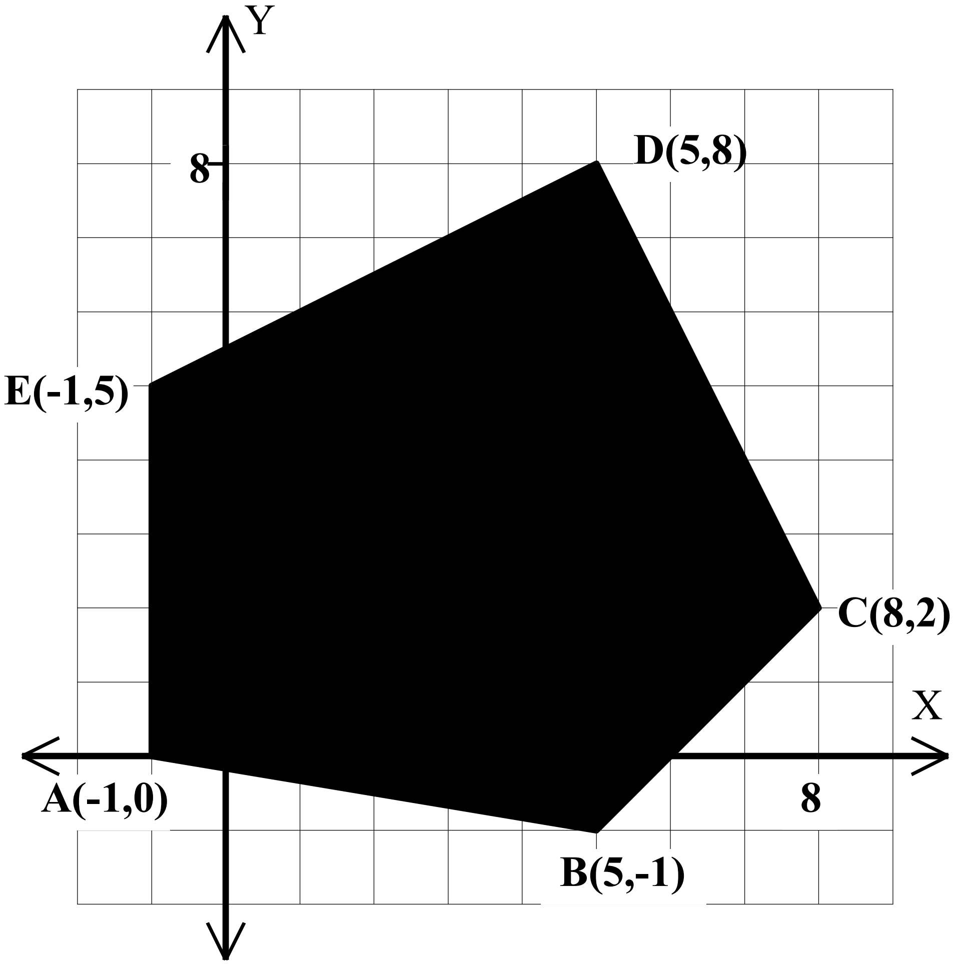

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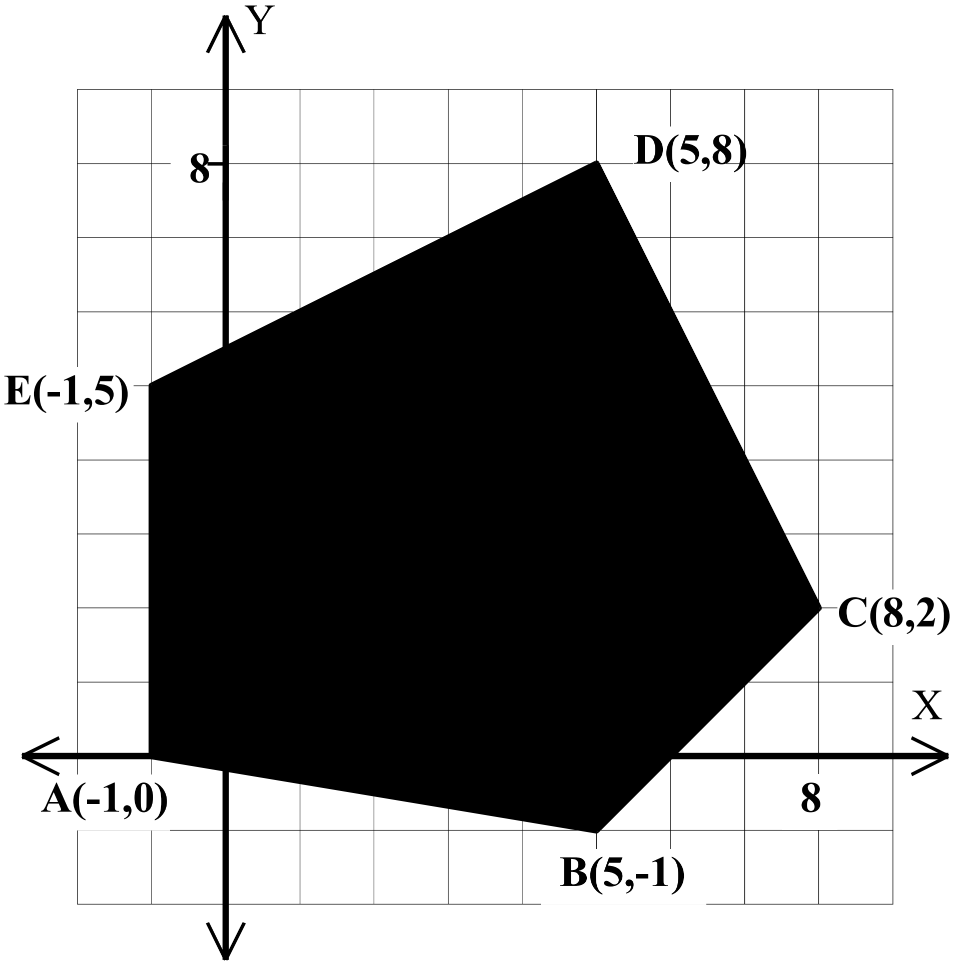

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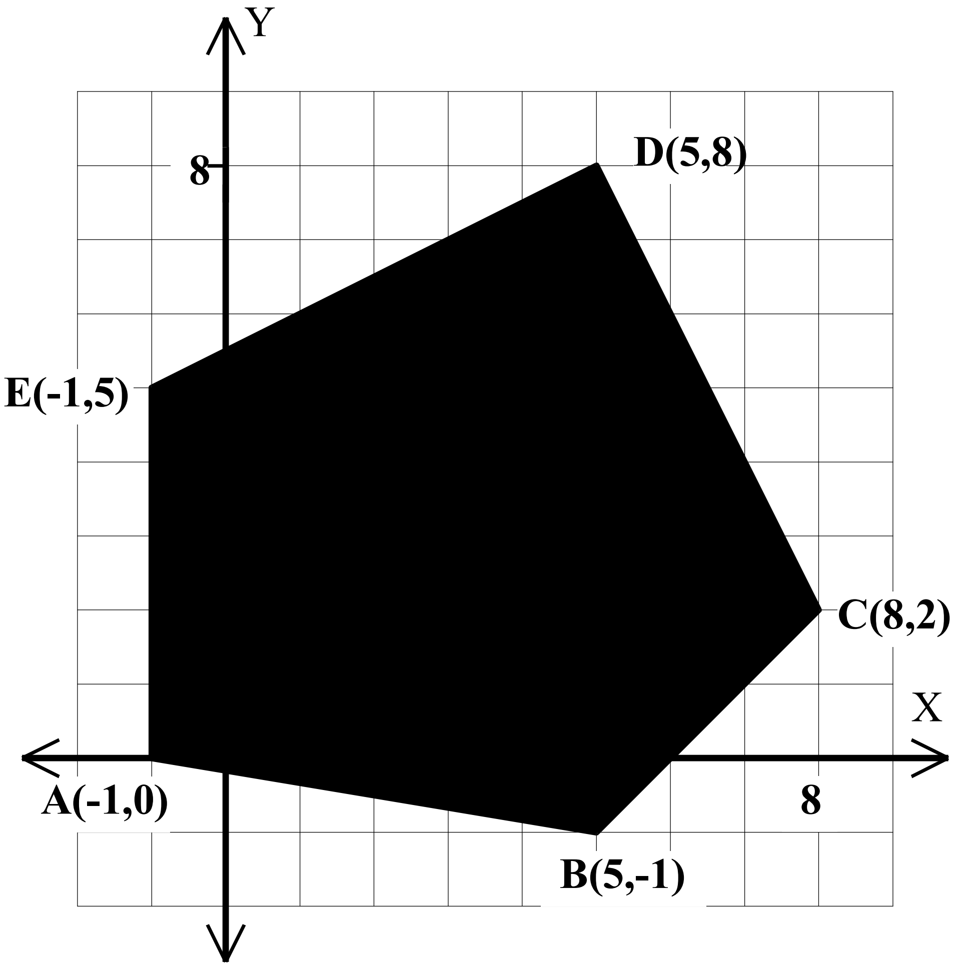

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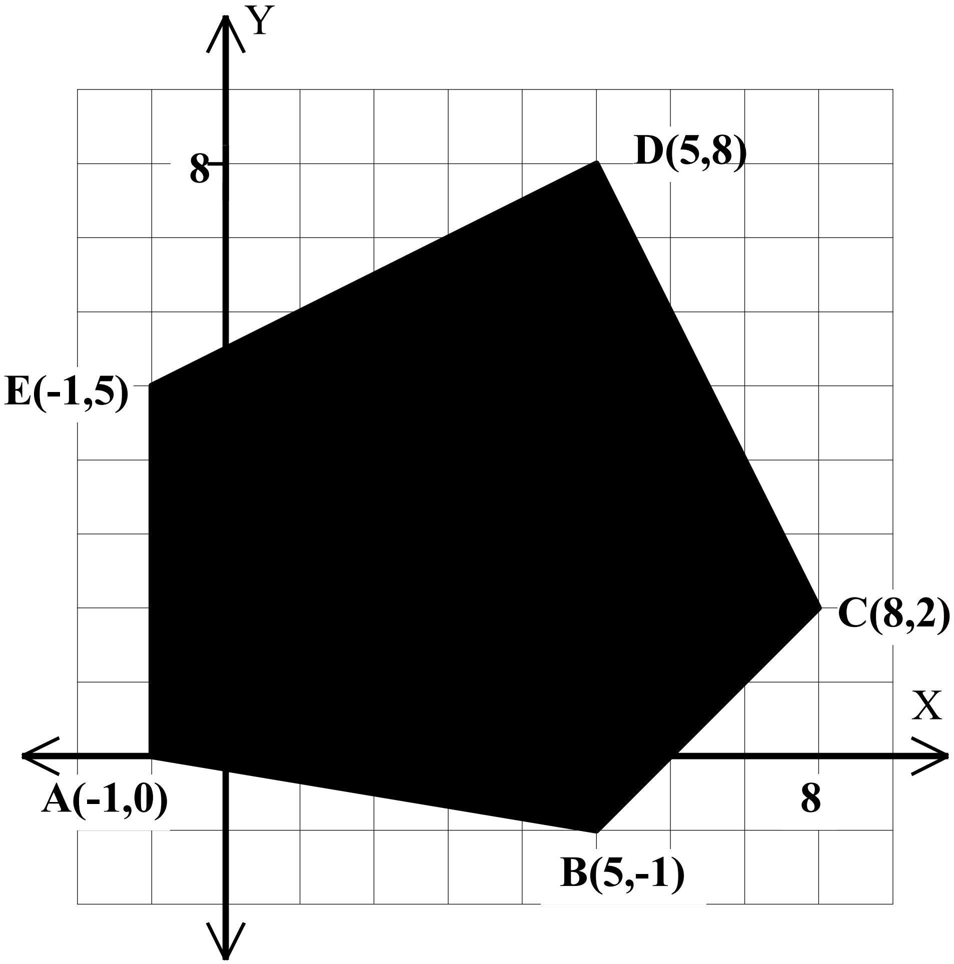

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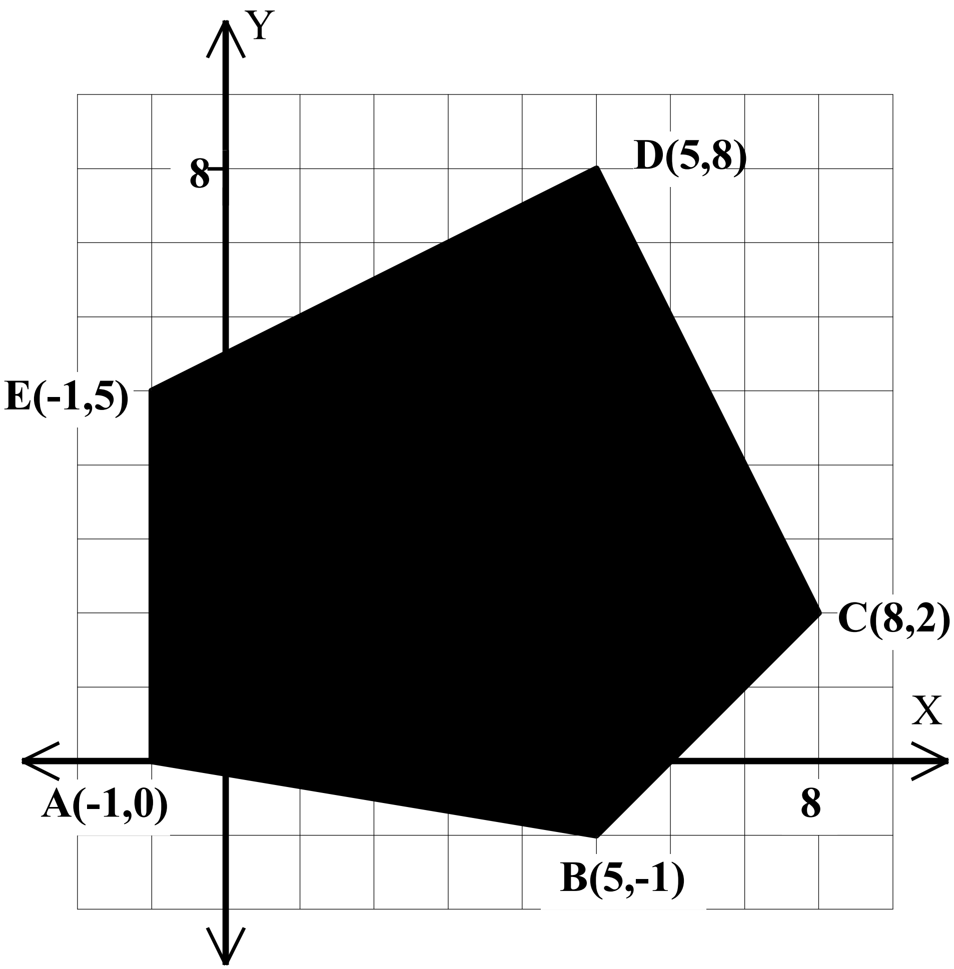

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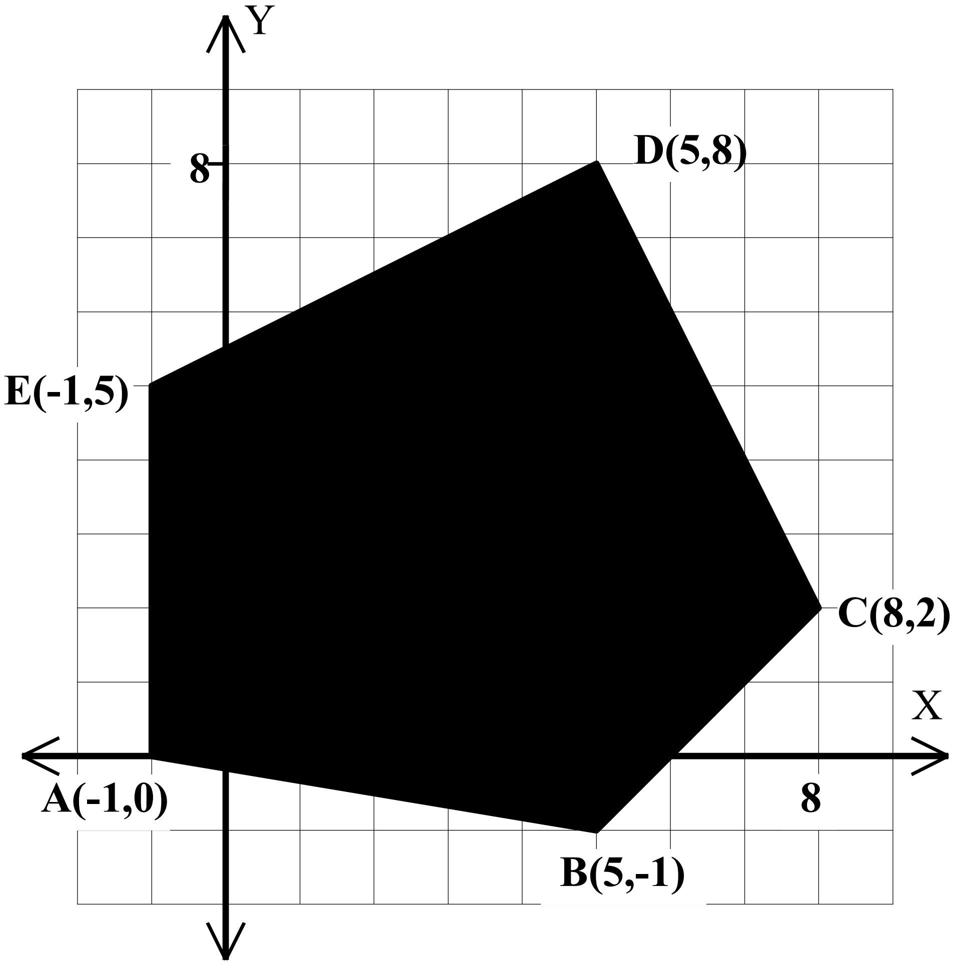

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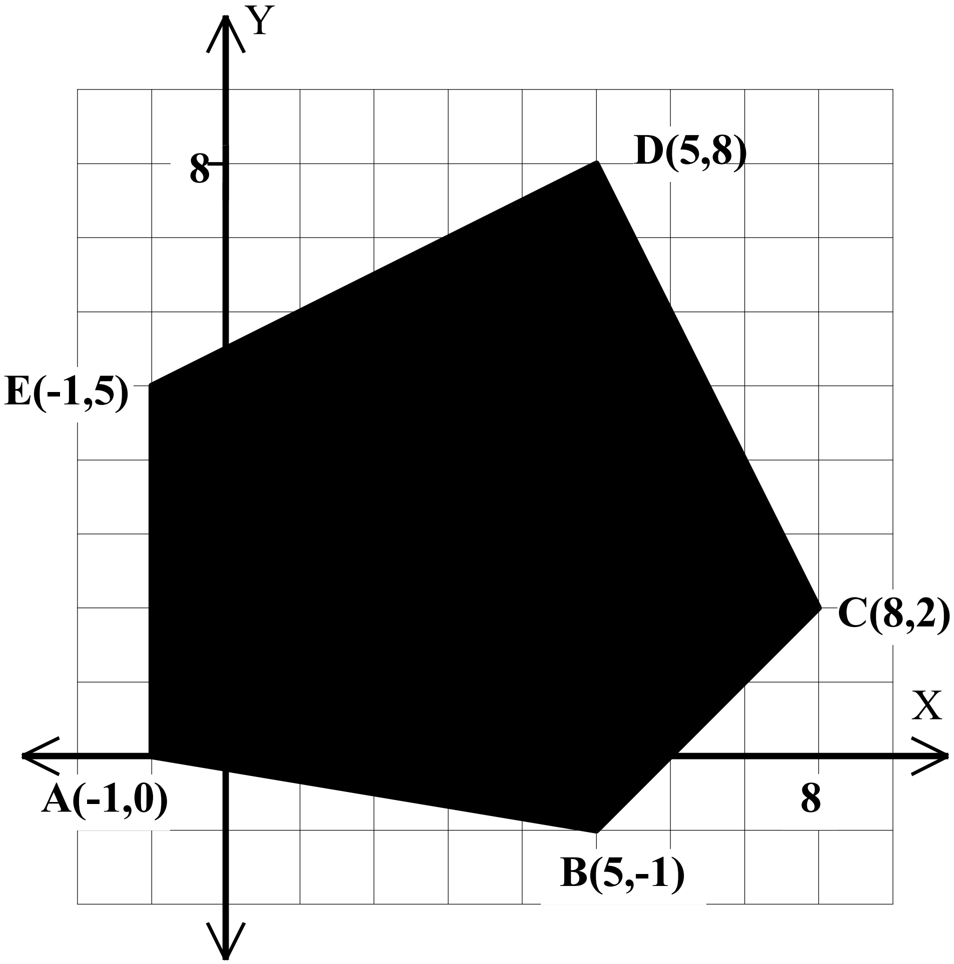

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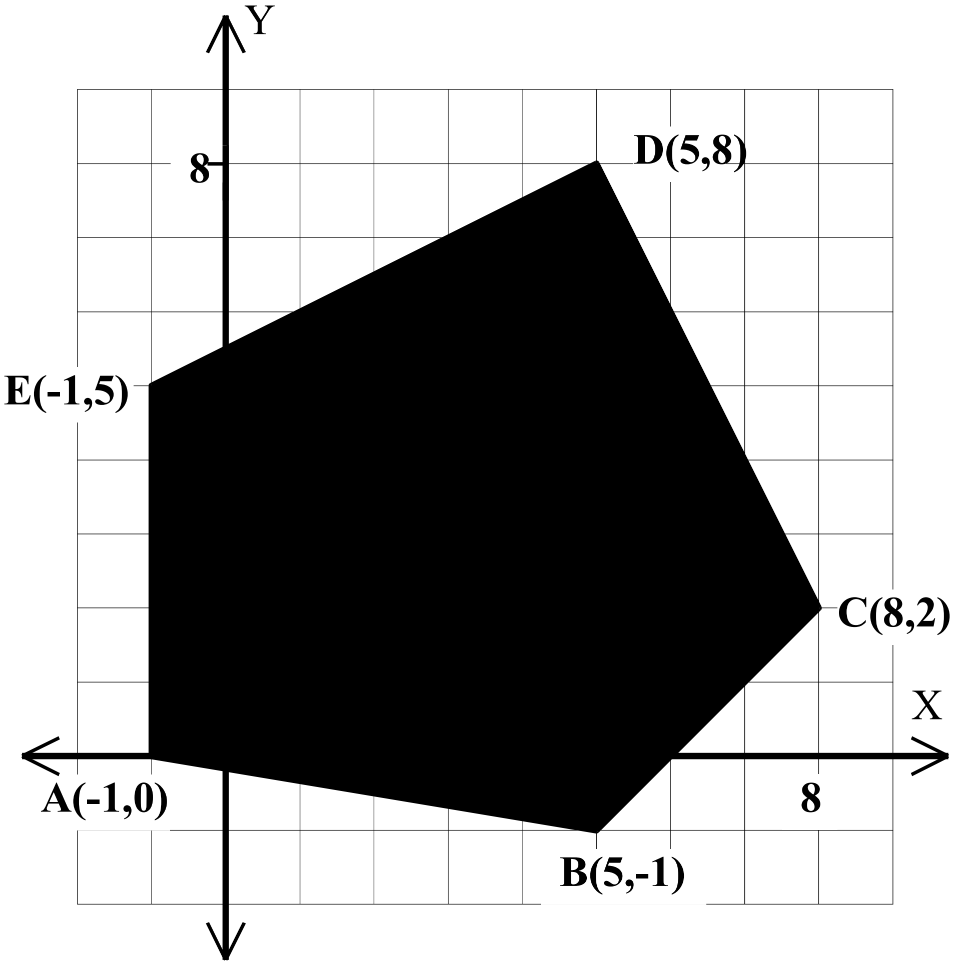

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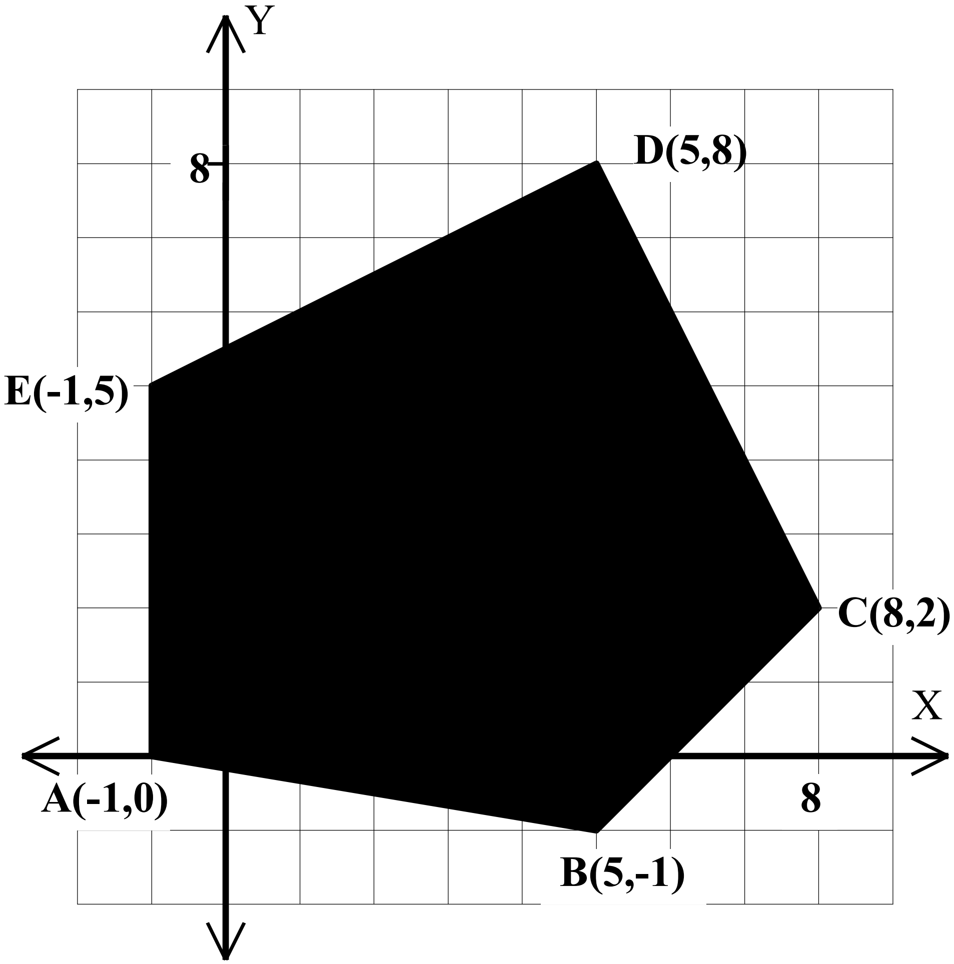

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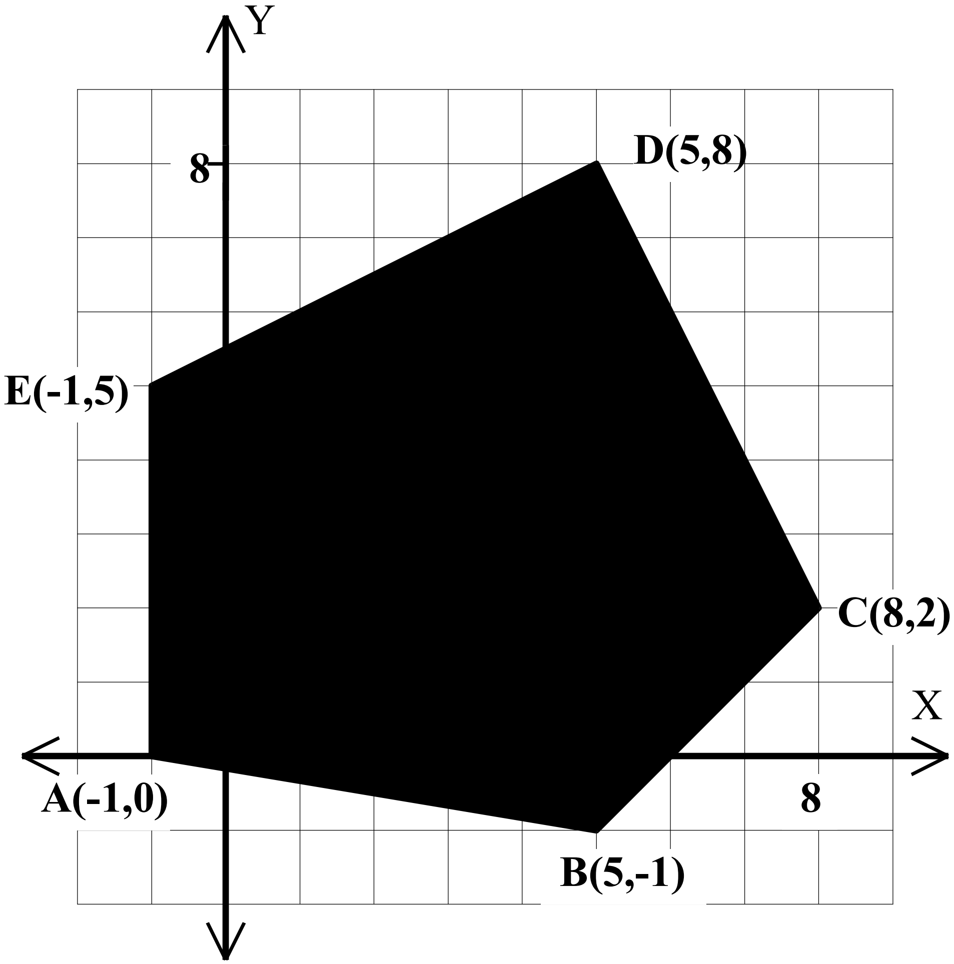

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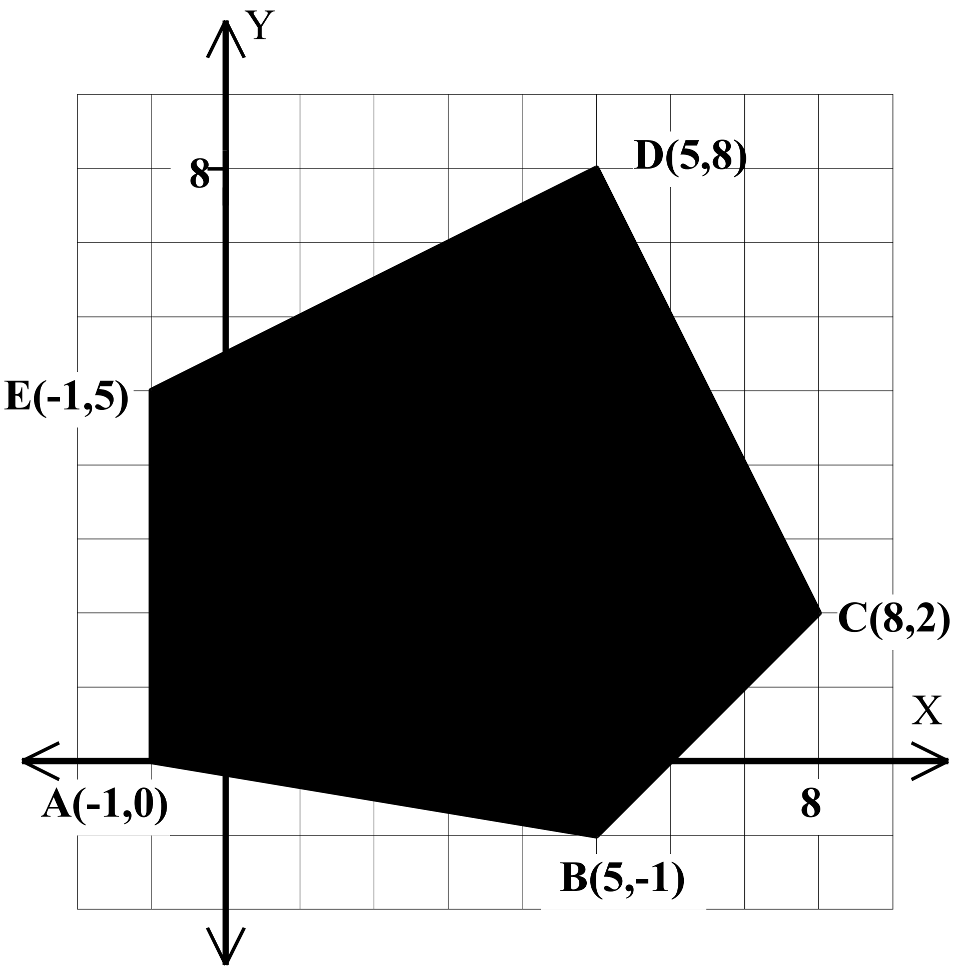

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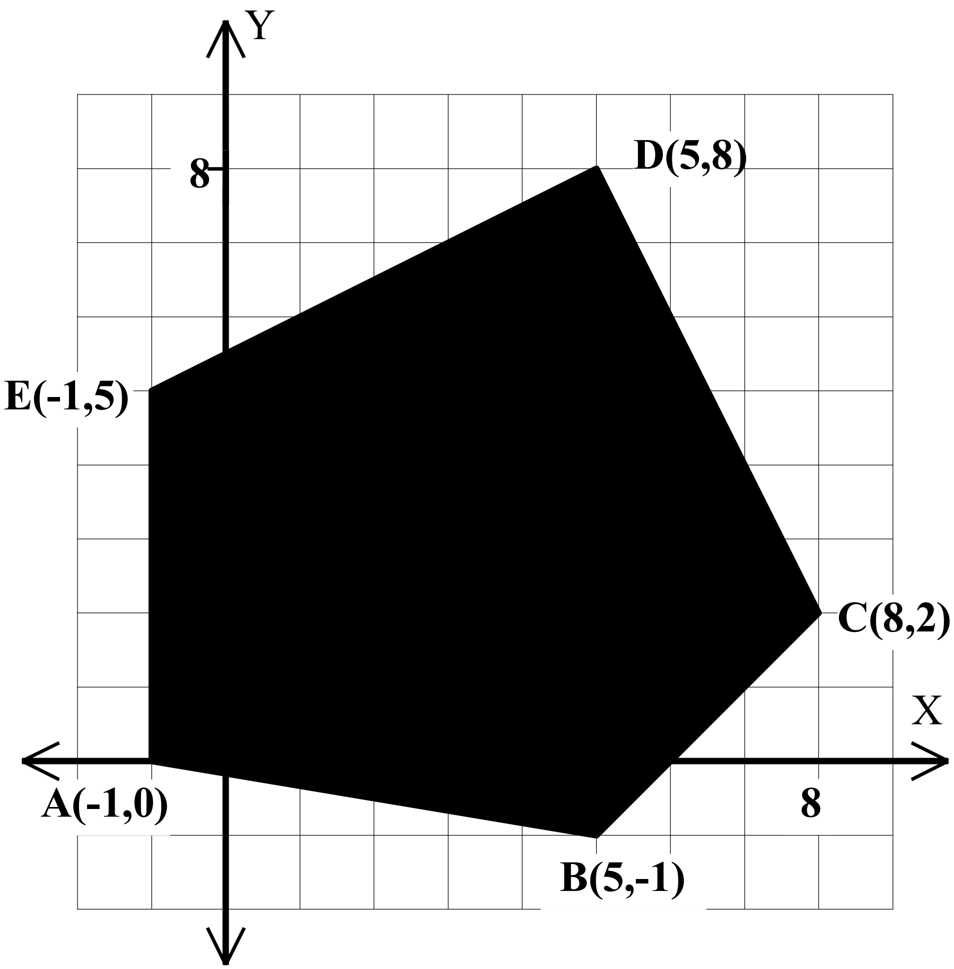

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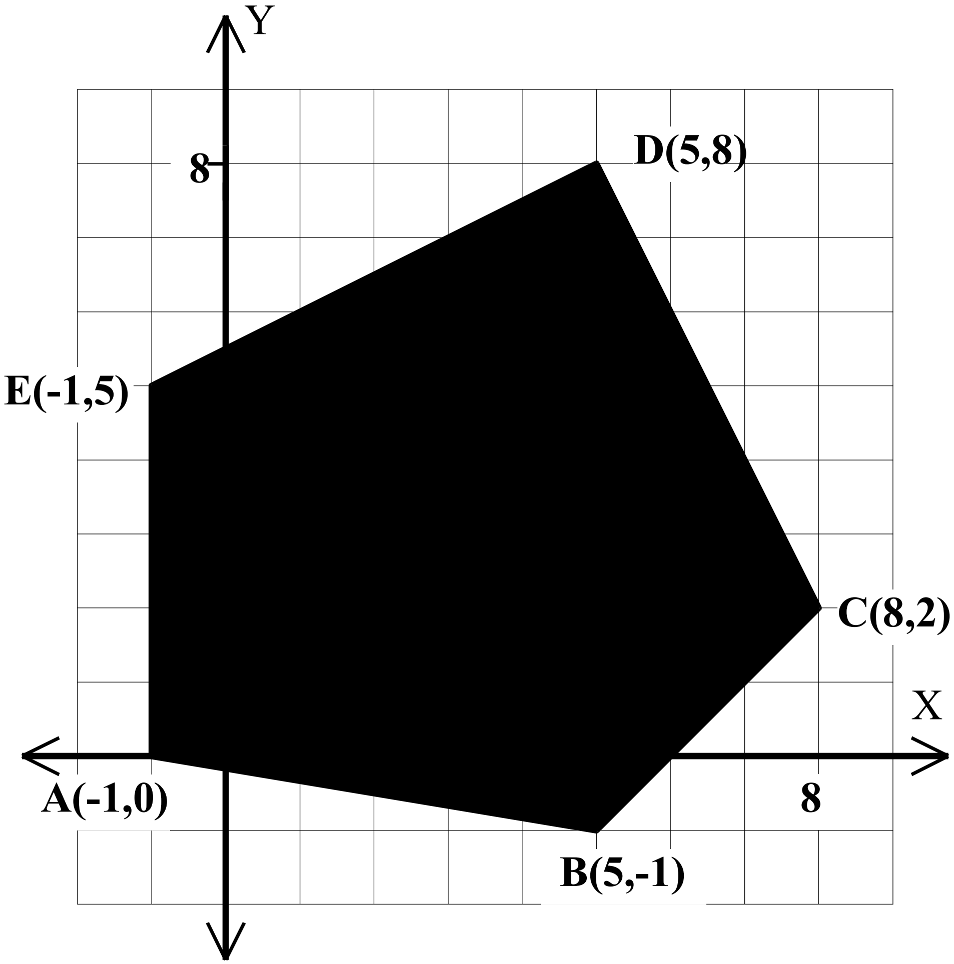

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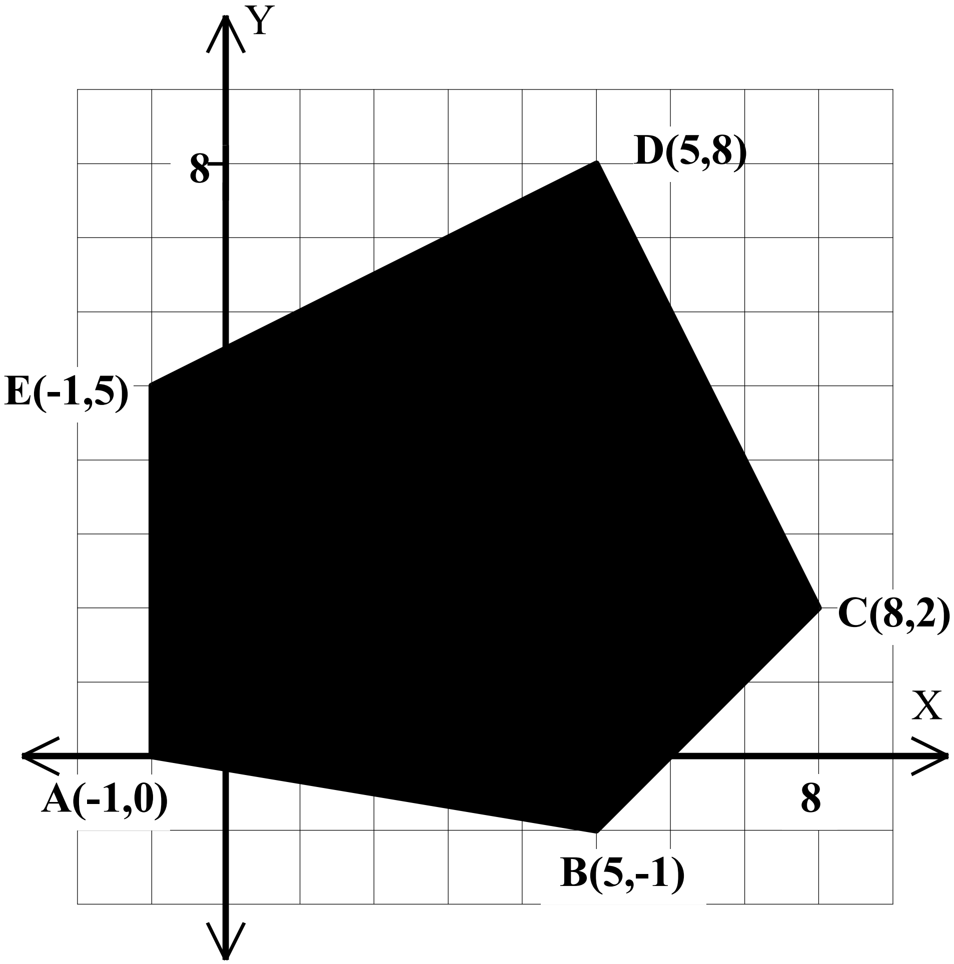

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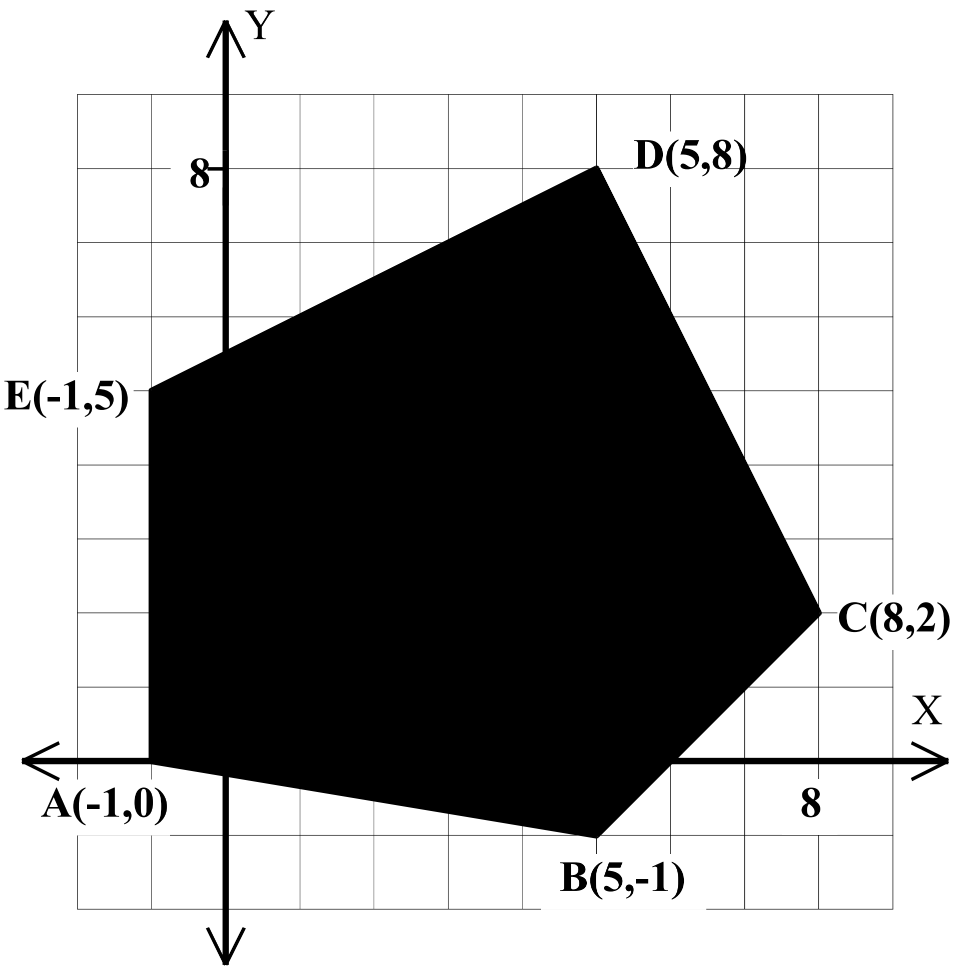

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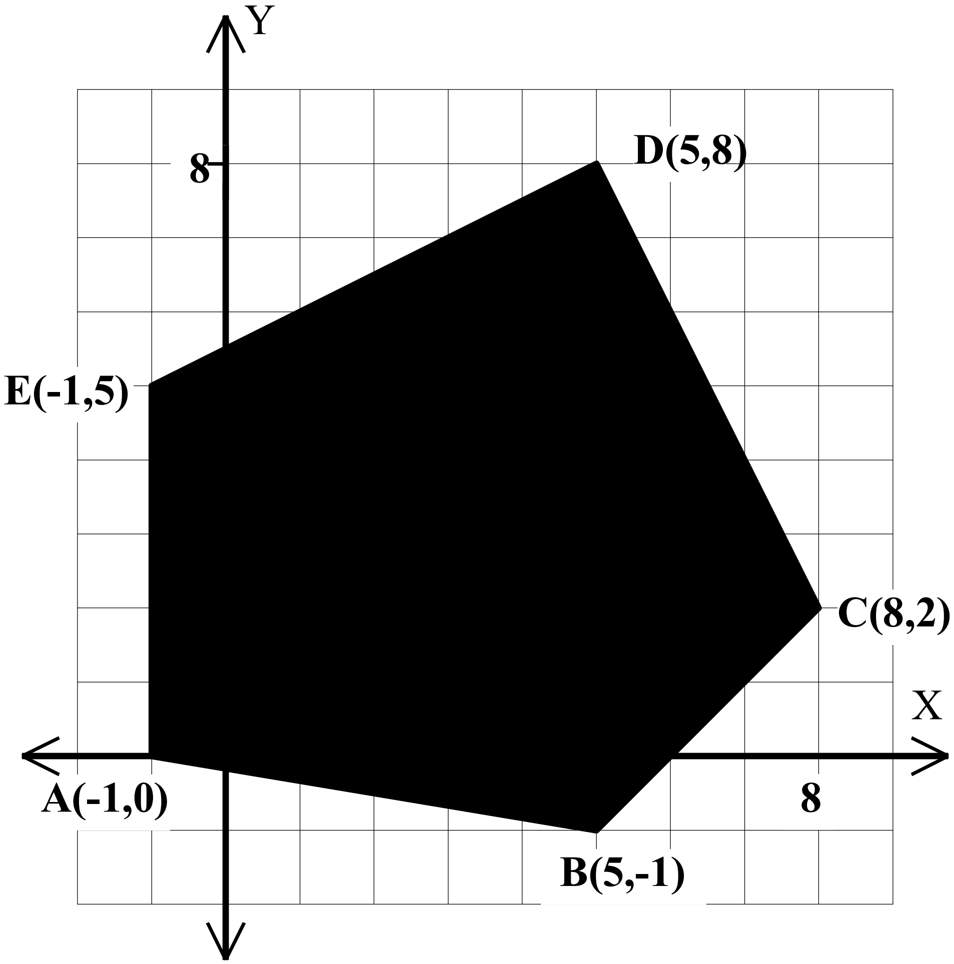

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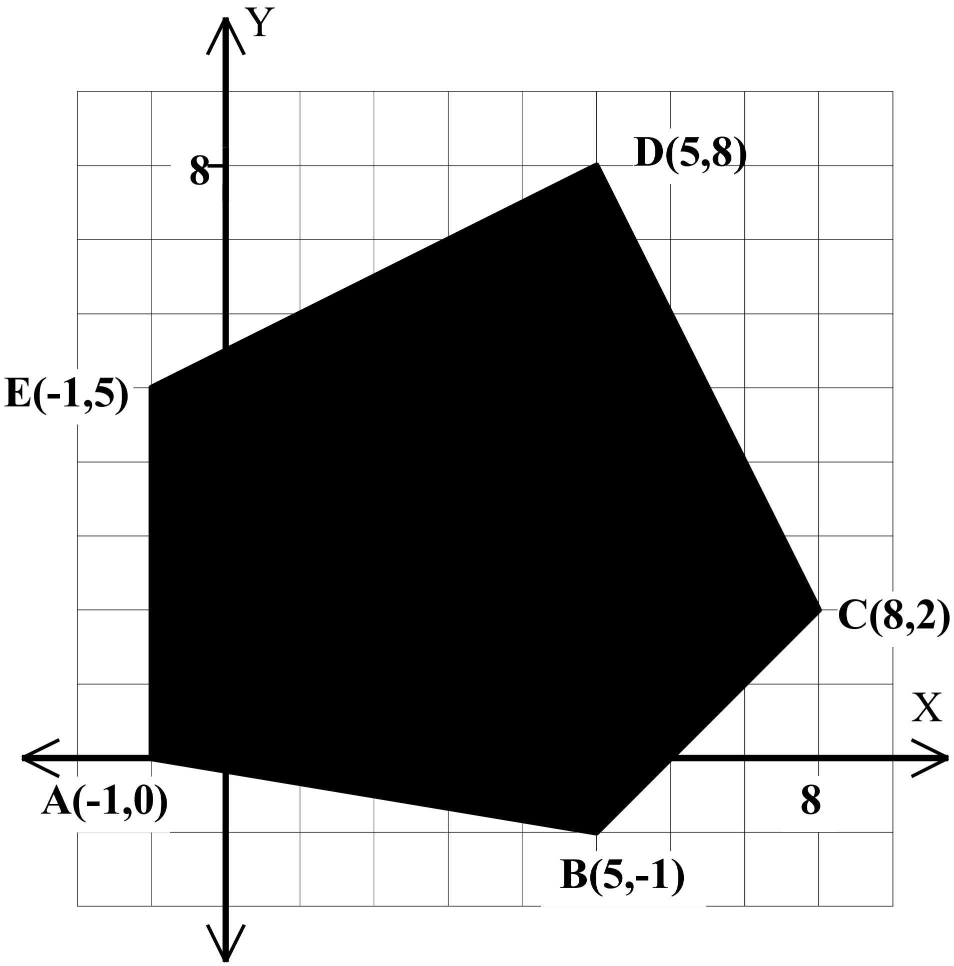

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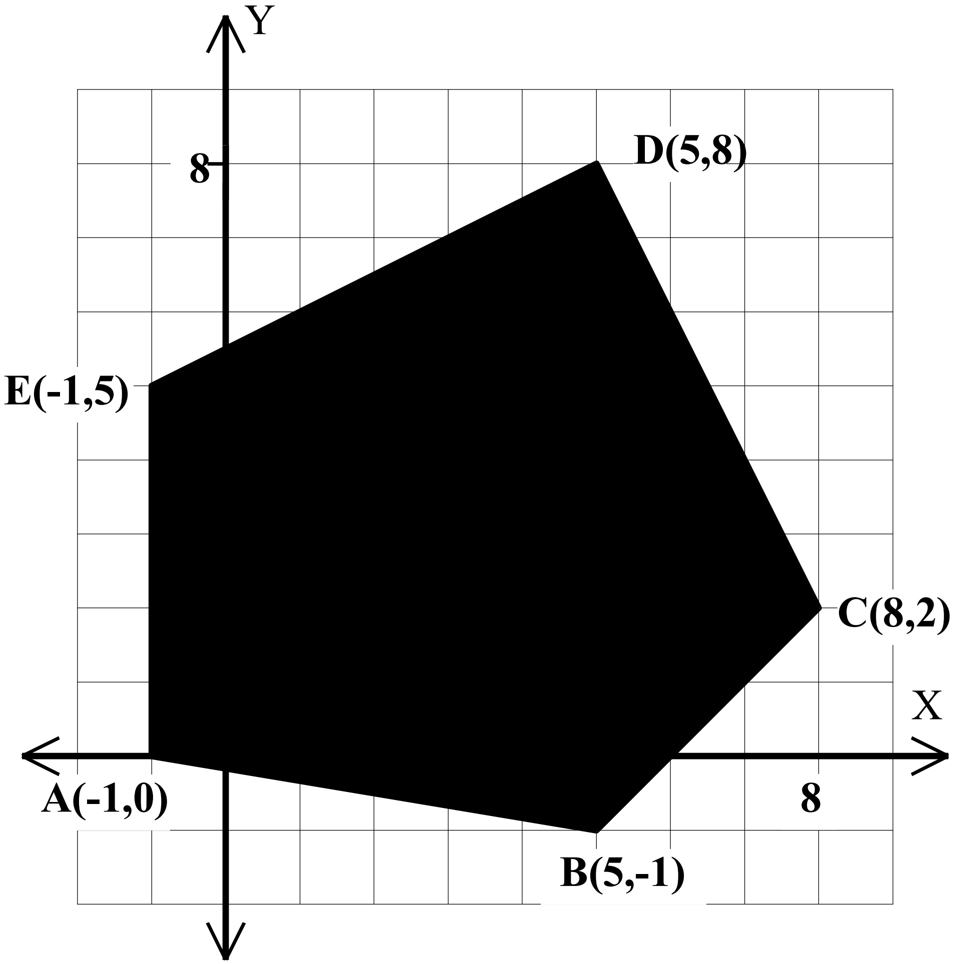

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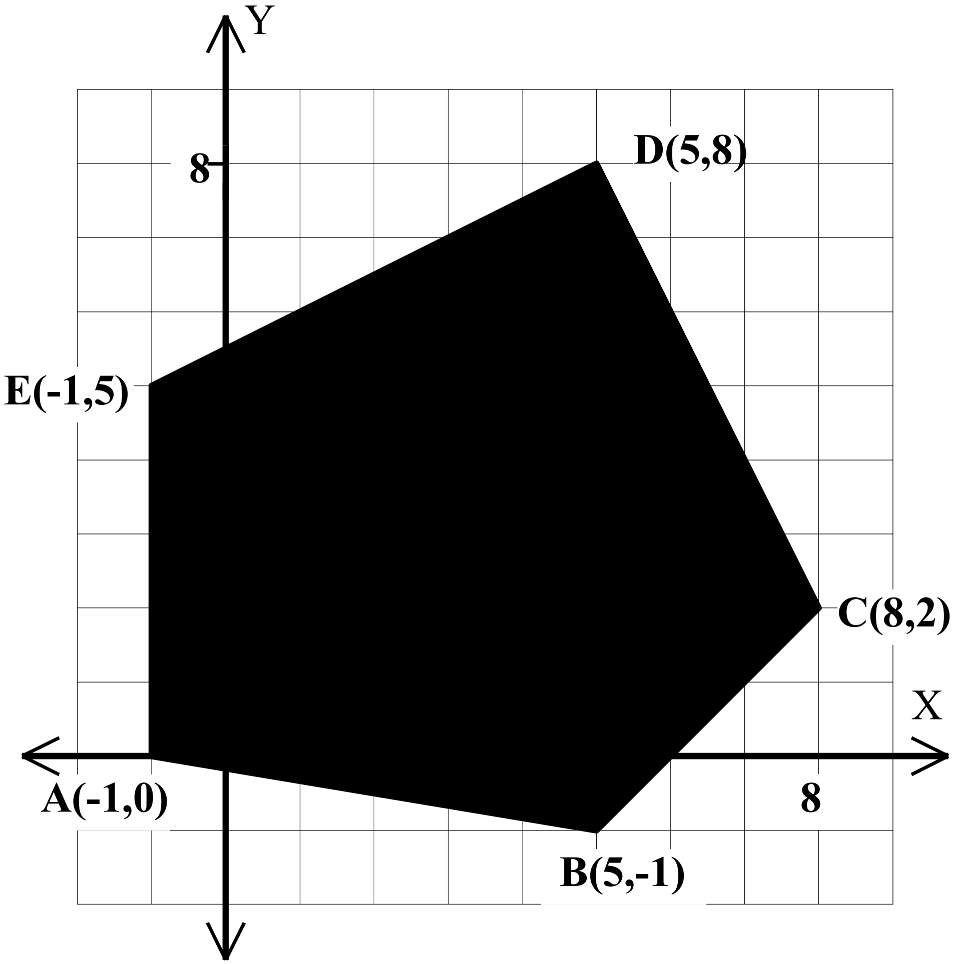

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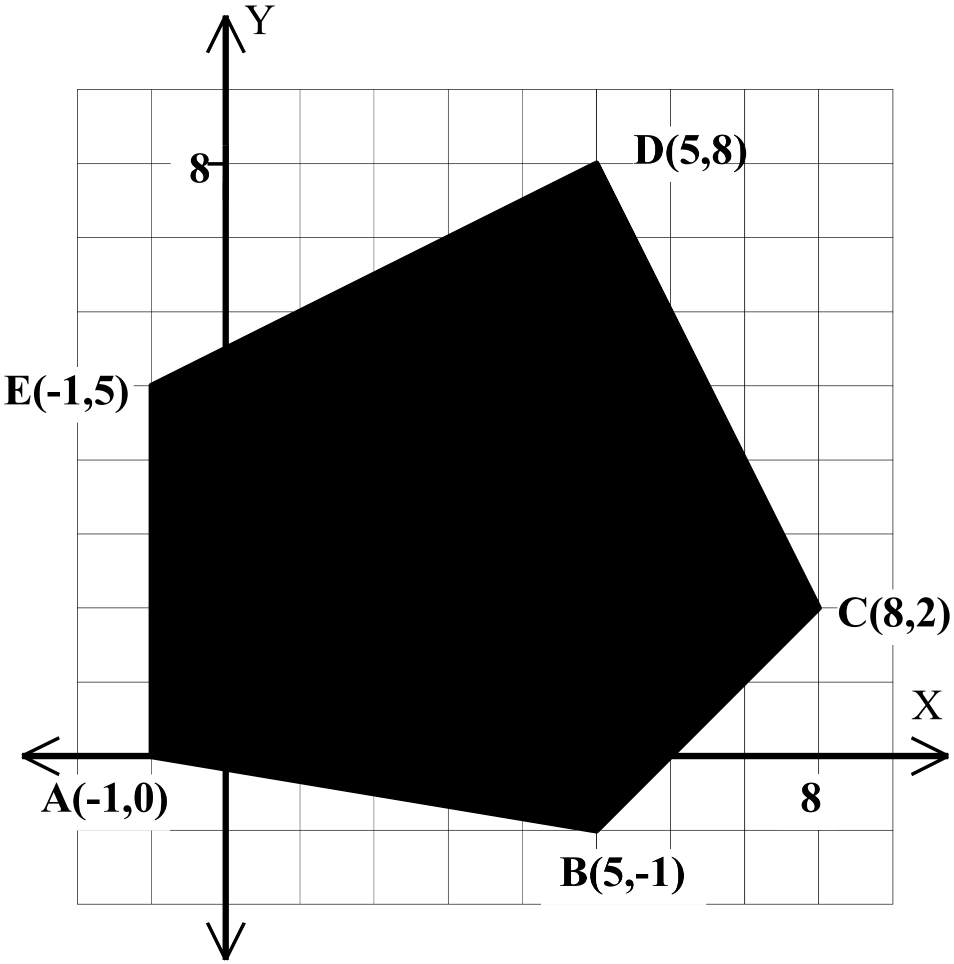

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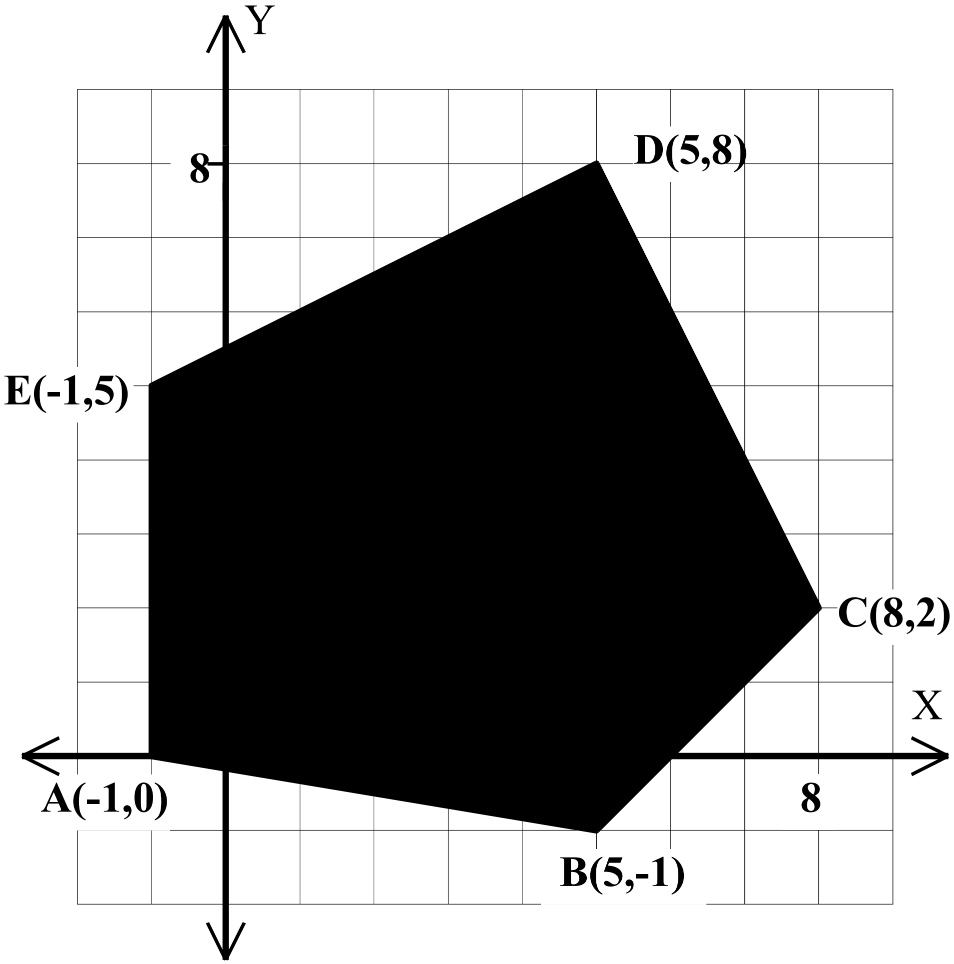

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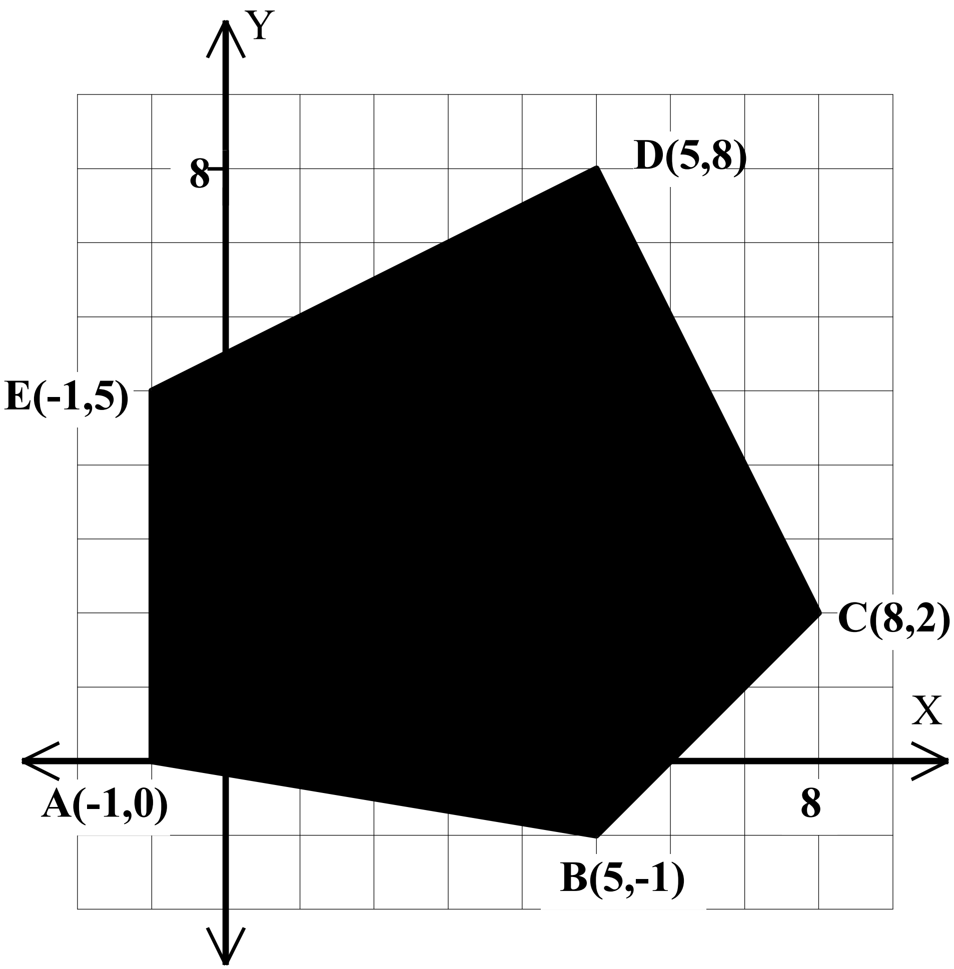

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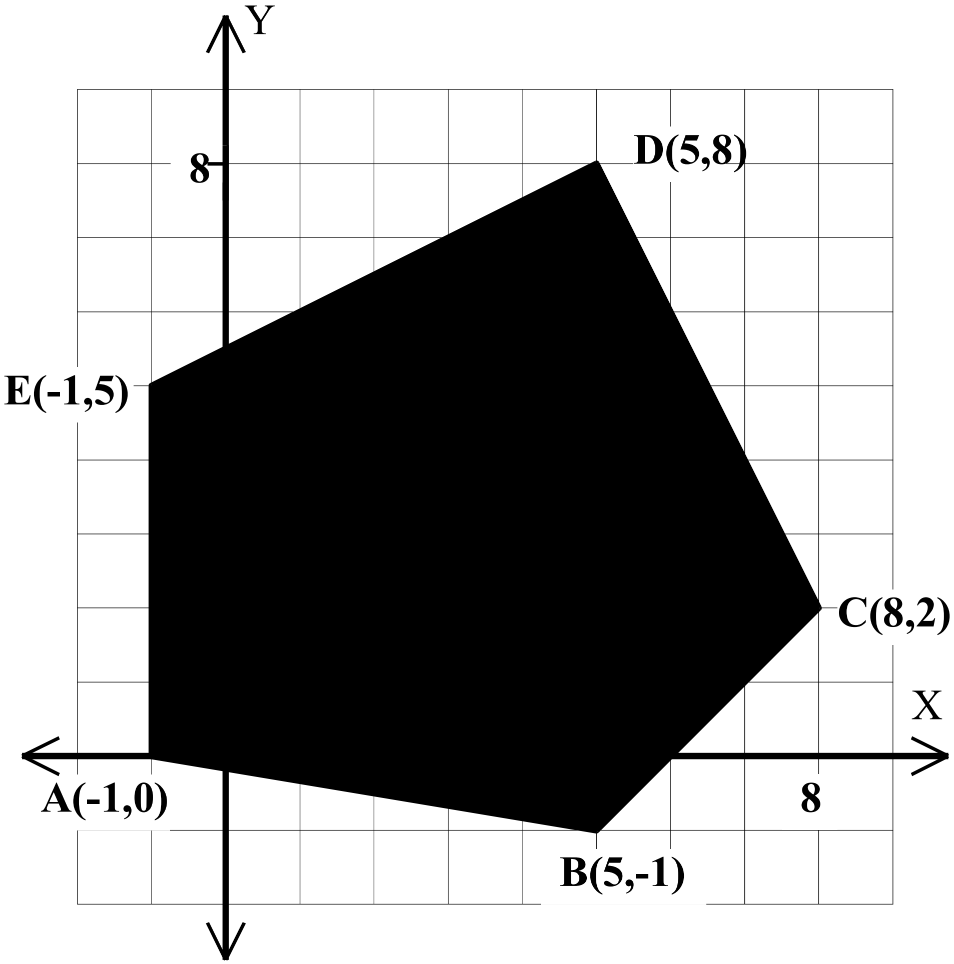

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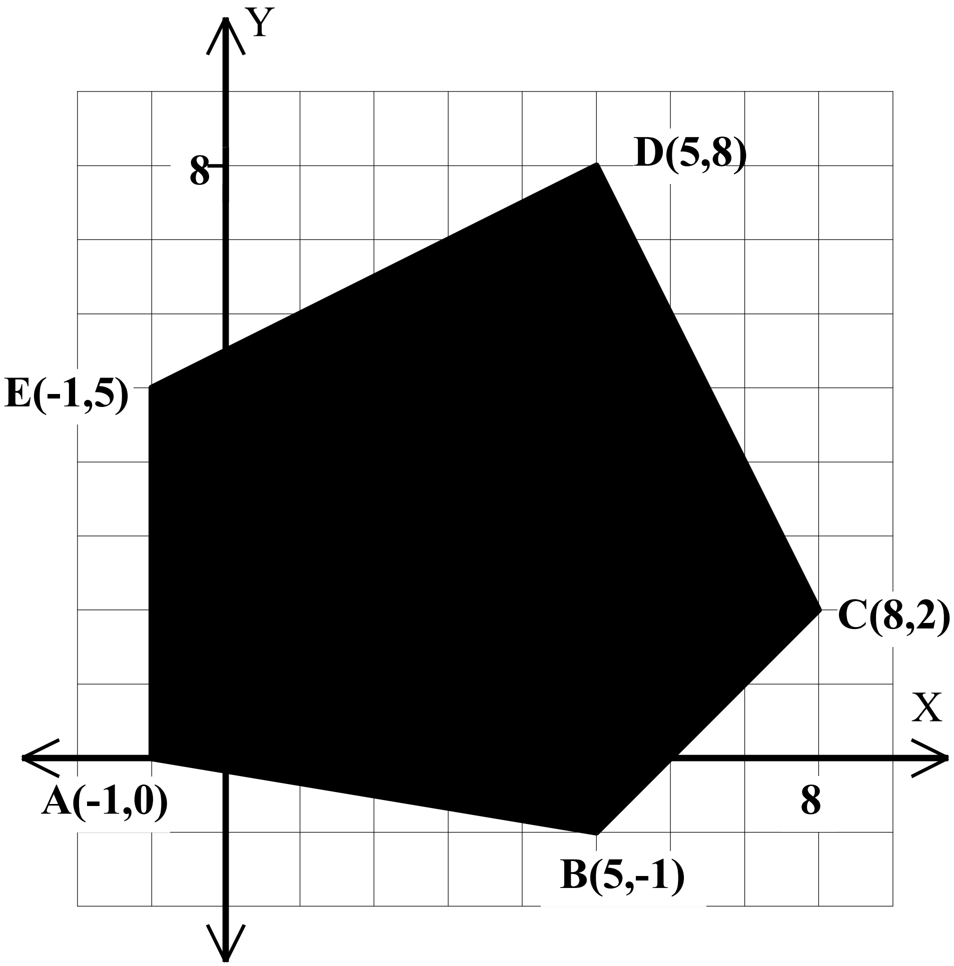

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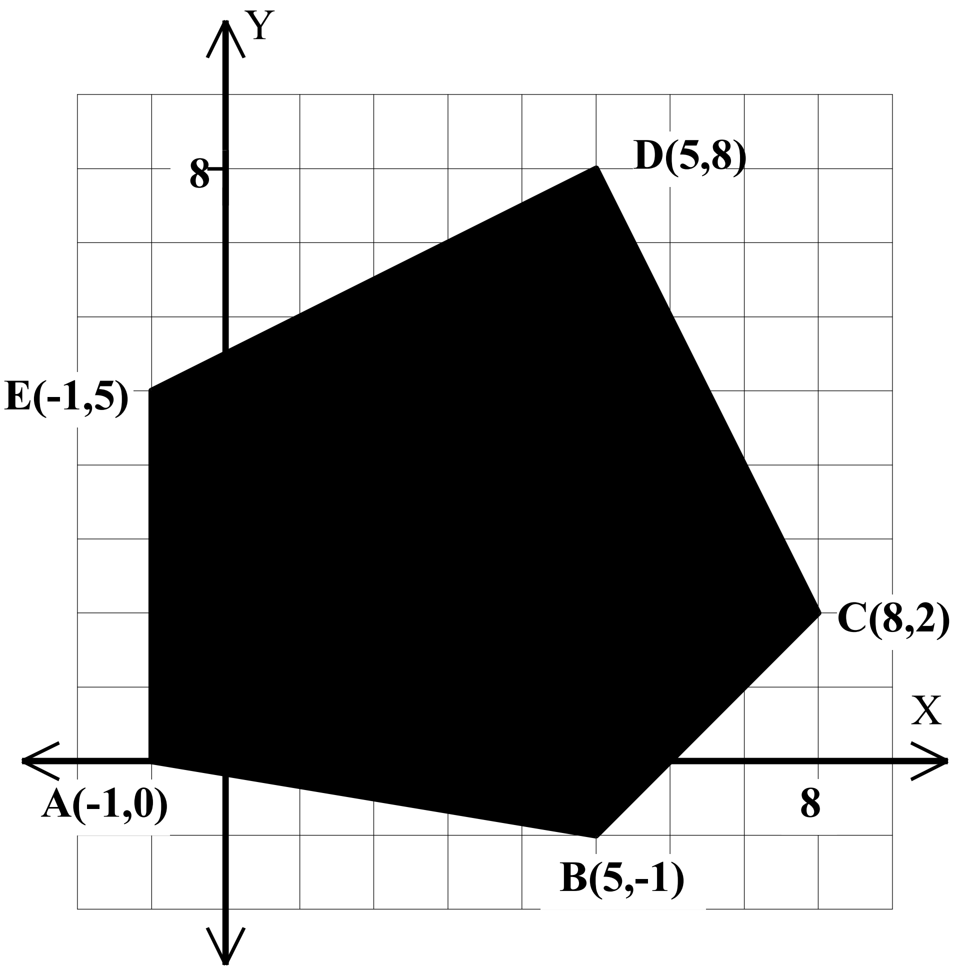
Algebra II Class Worksheet #4 Unit 4



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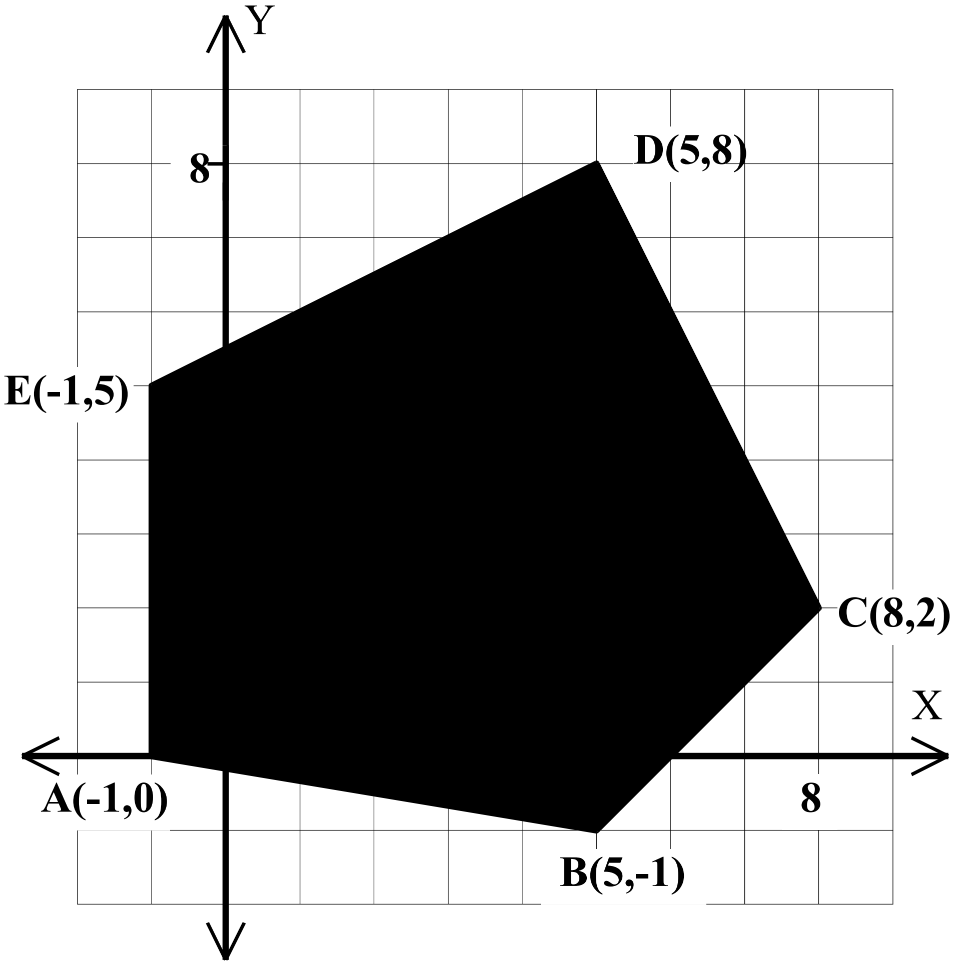
Algebra II Class Worksheet #4 Unit 4



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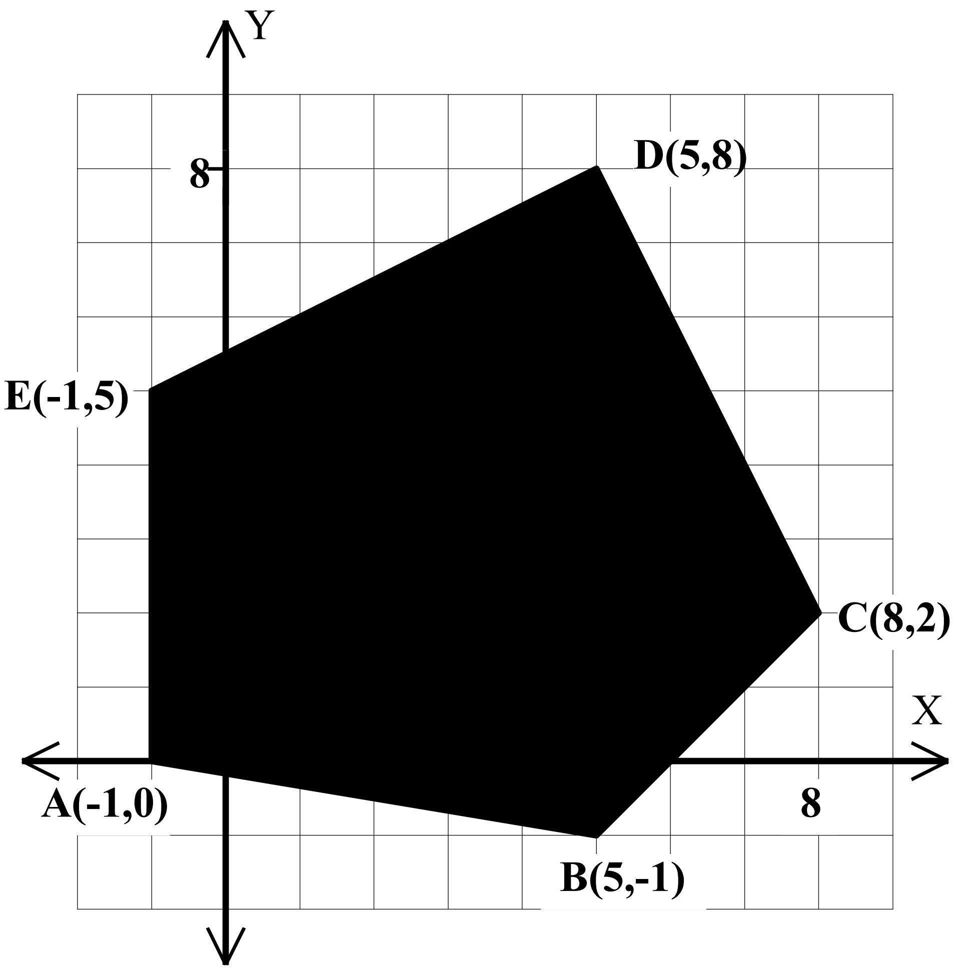
Algebra II Class Worksheet #4 Unit 4



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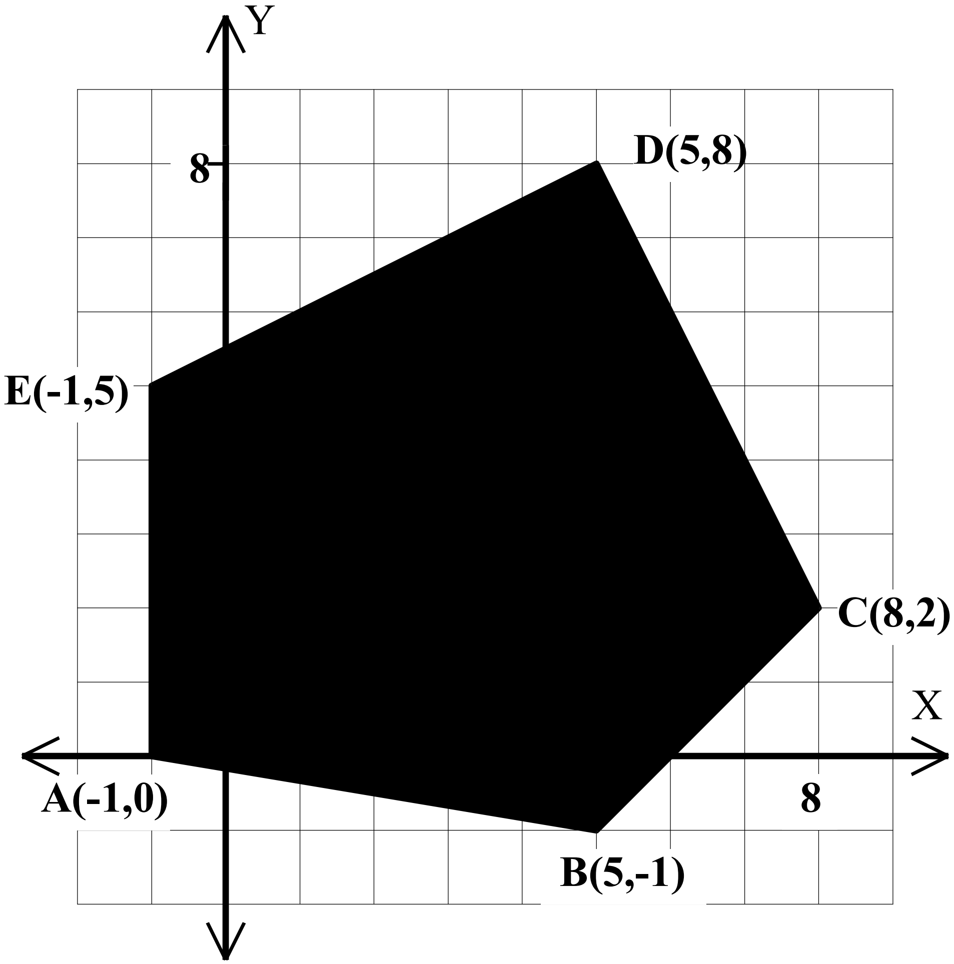

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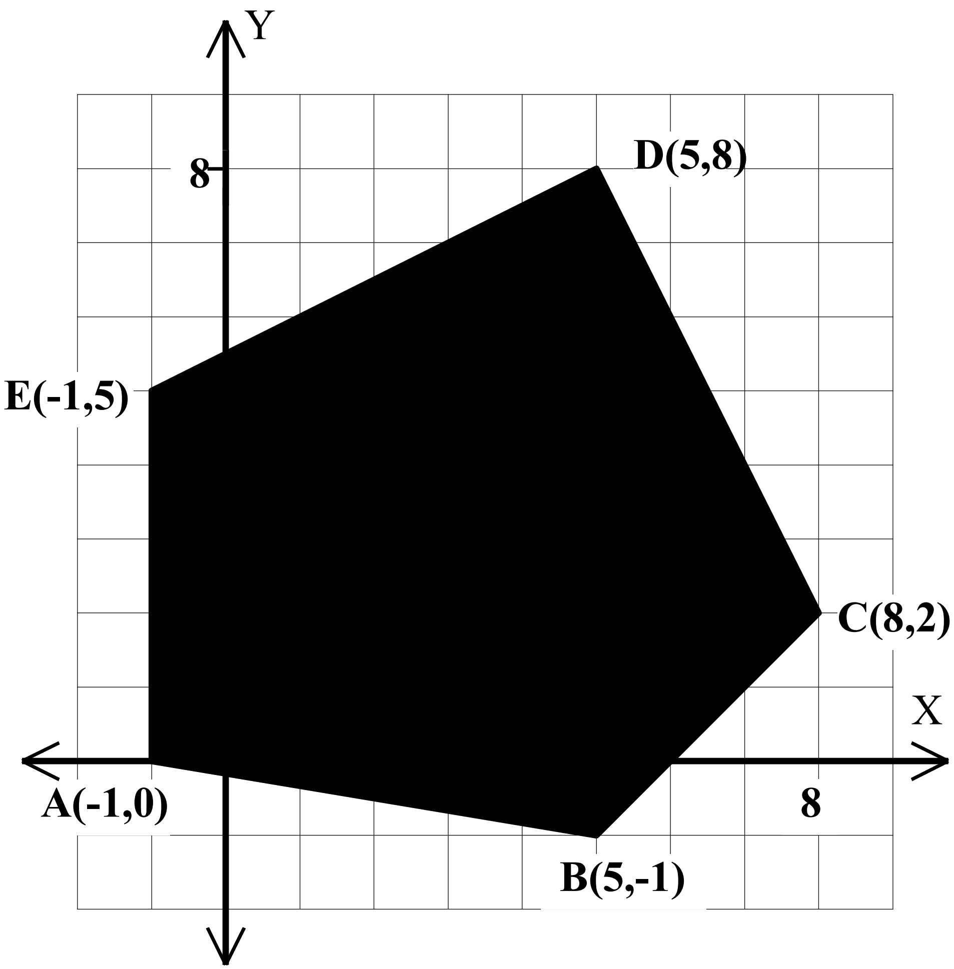
Algebra II Class Worksheet #4 Unit 4



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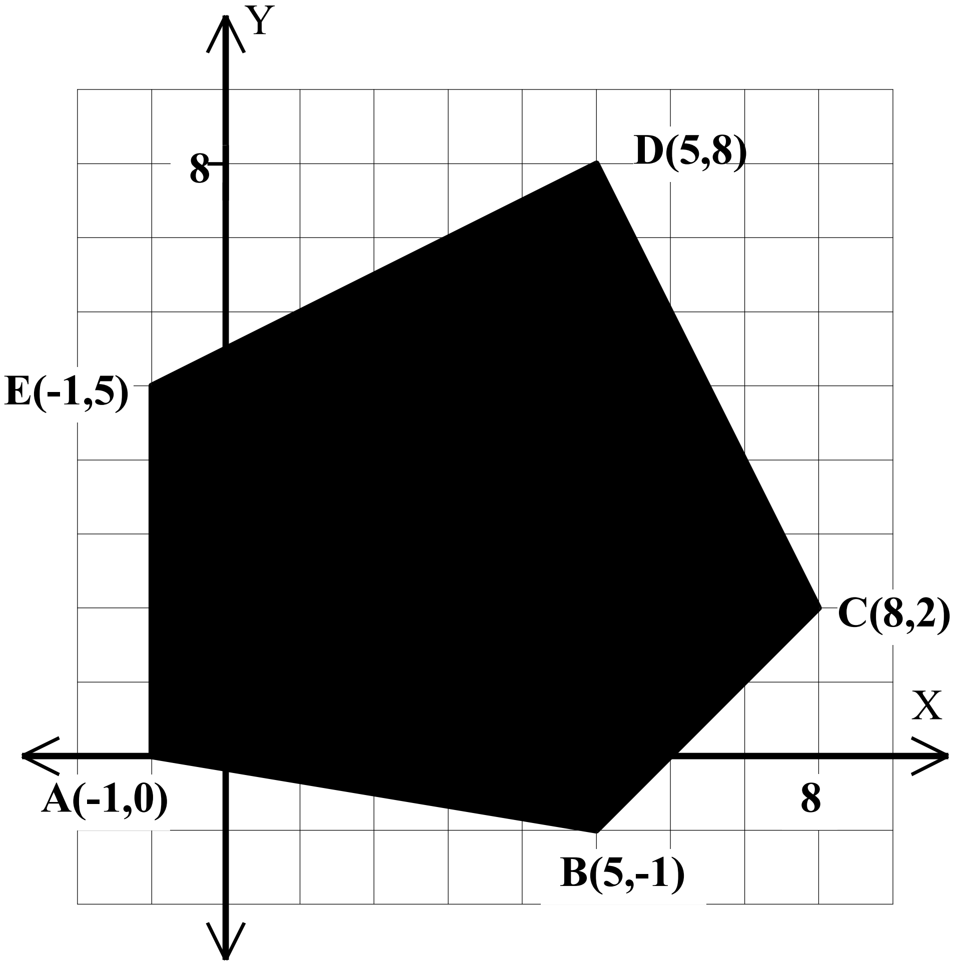

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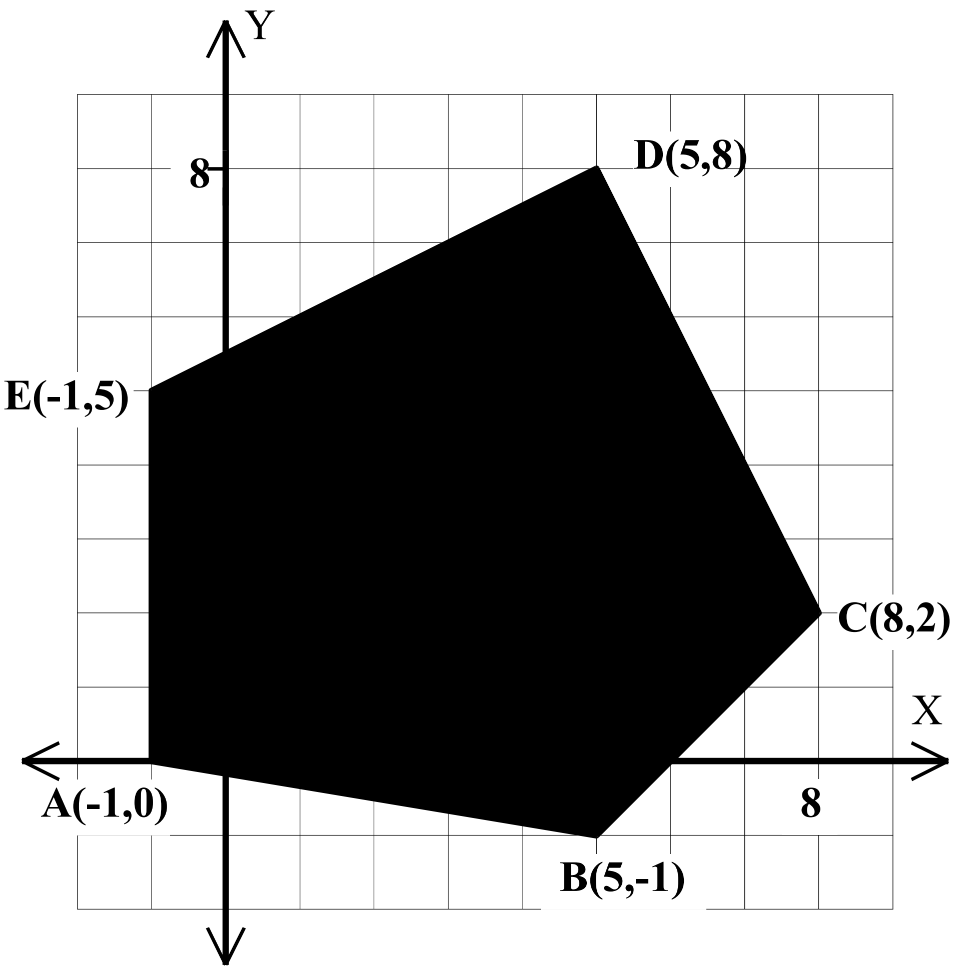

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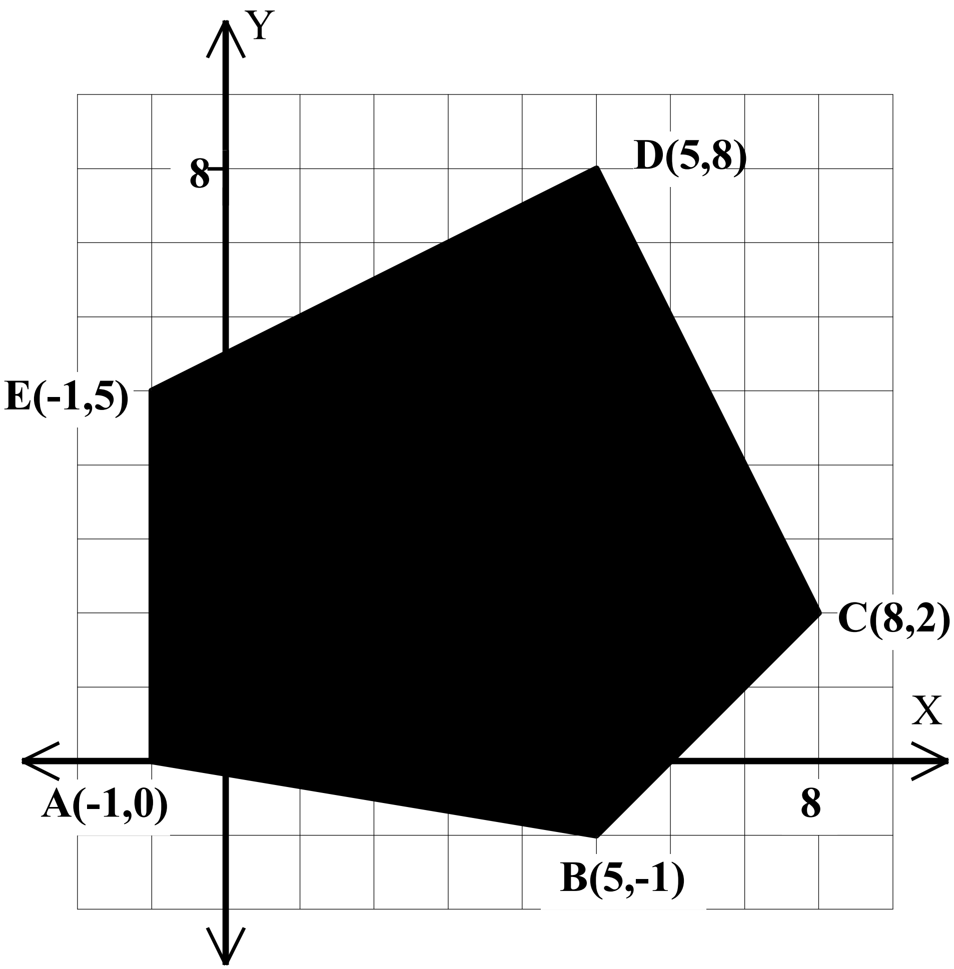
Algebra II Class Worksheet #4 Unit 4



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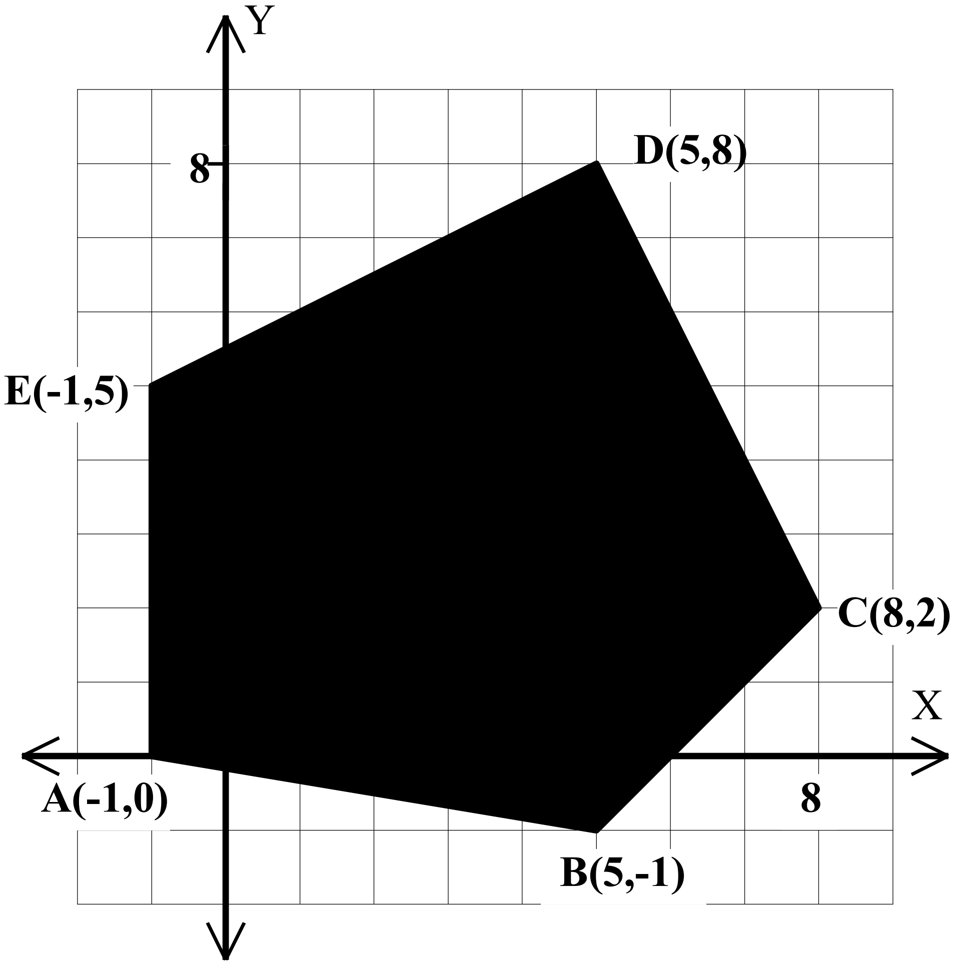

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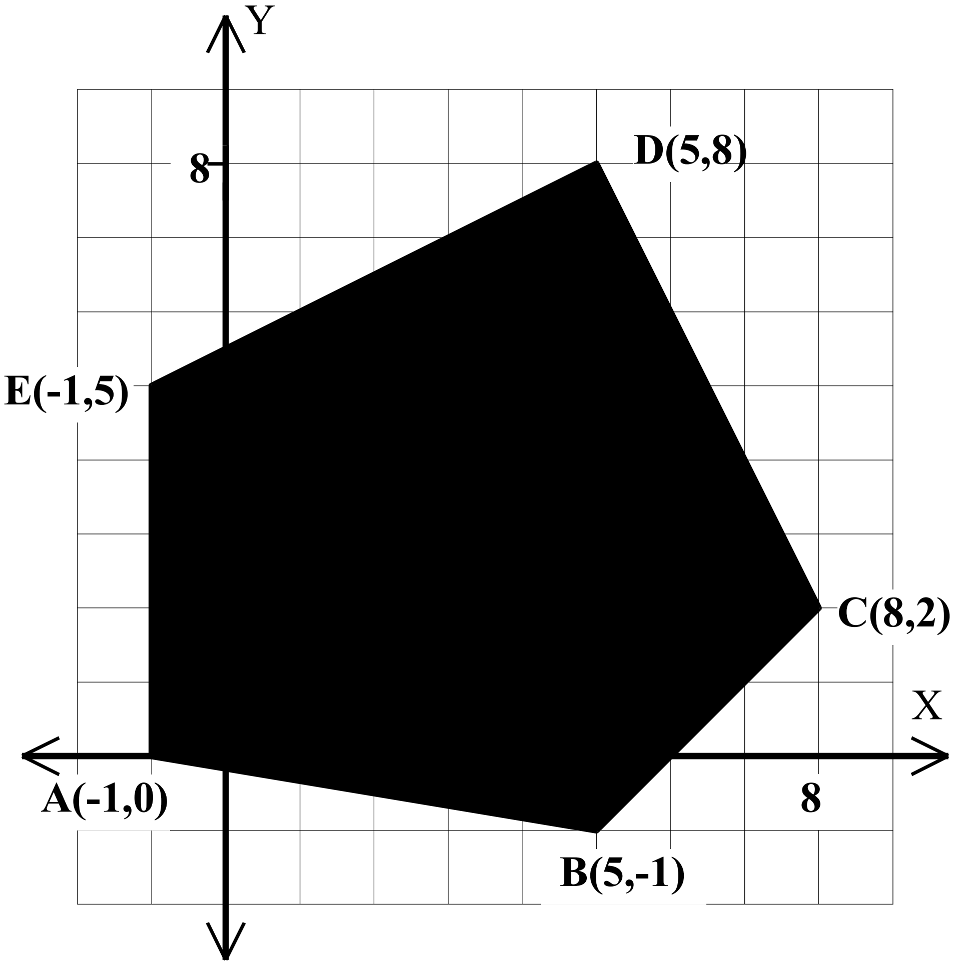
Algebra II Class Worksheet #4 Unit 4



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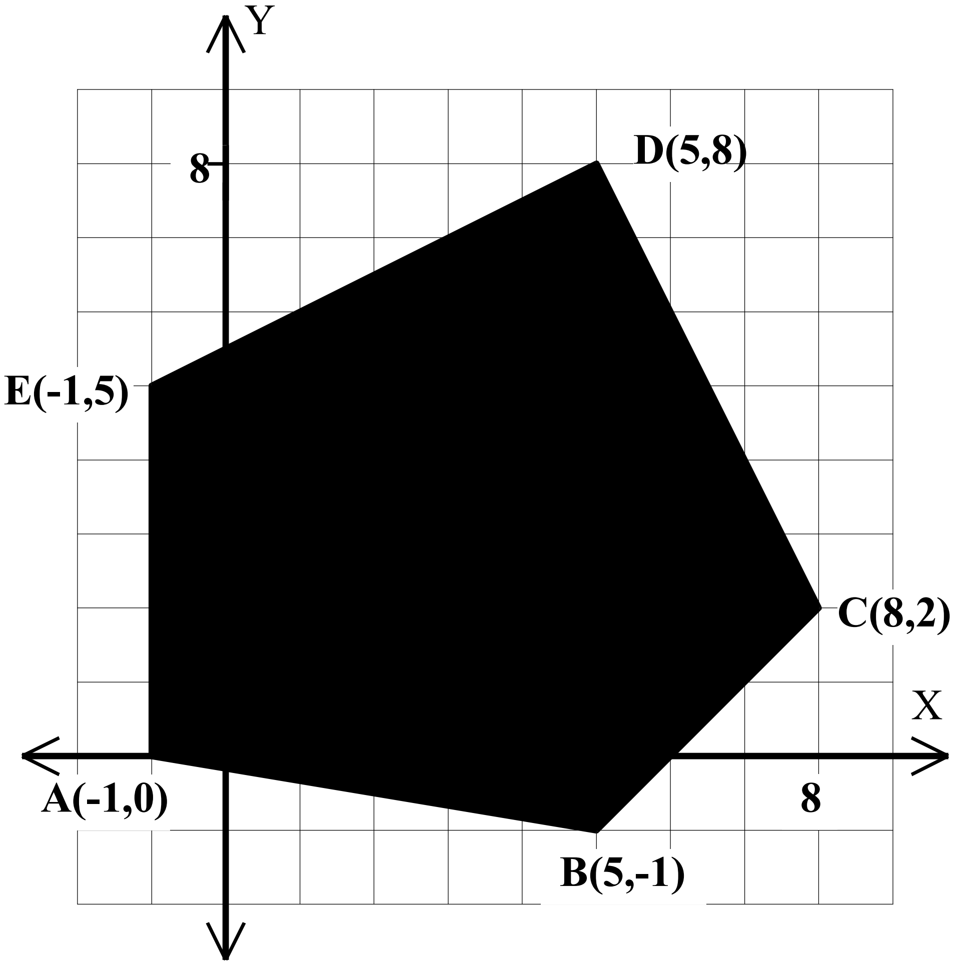
Algebra II   Class Worksheet #4   Unit 4



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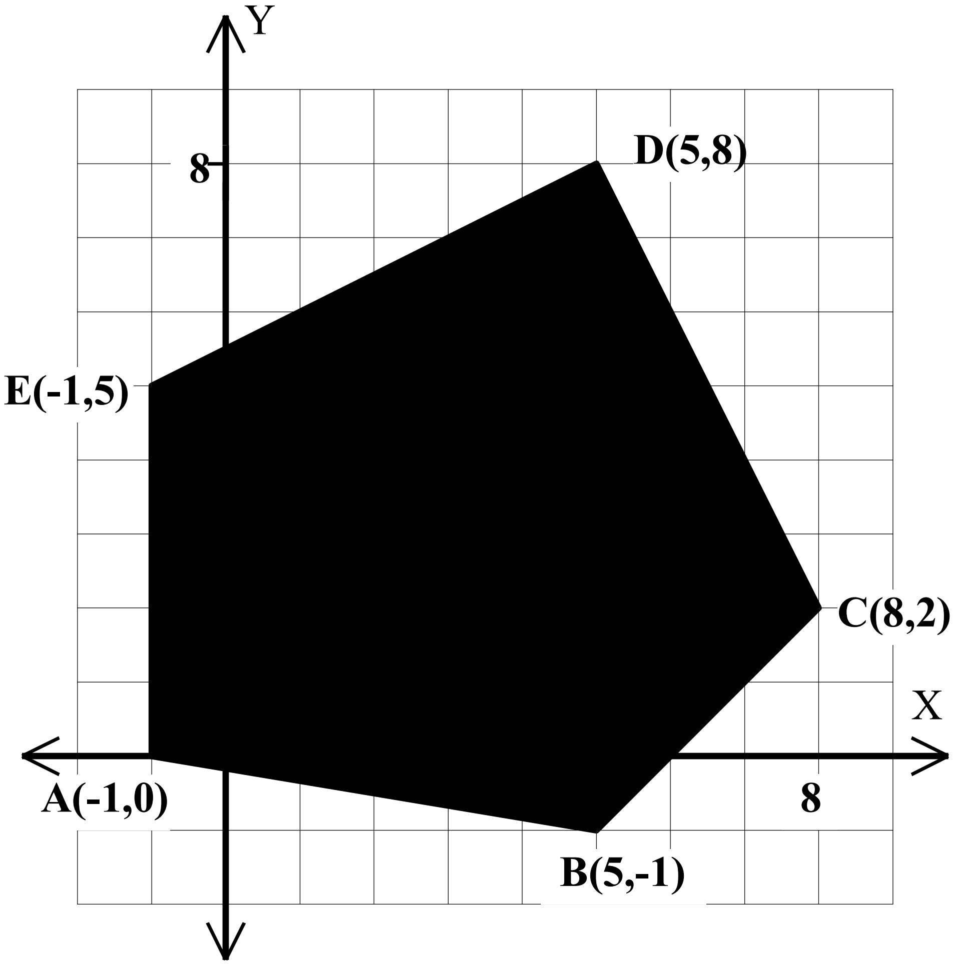
Algebra II   Class Worksheet #4   Unit 4



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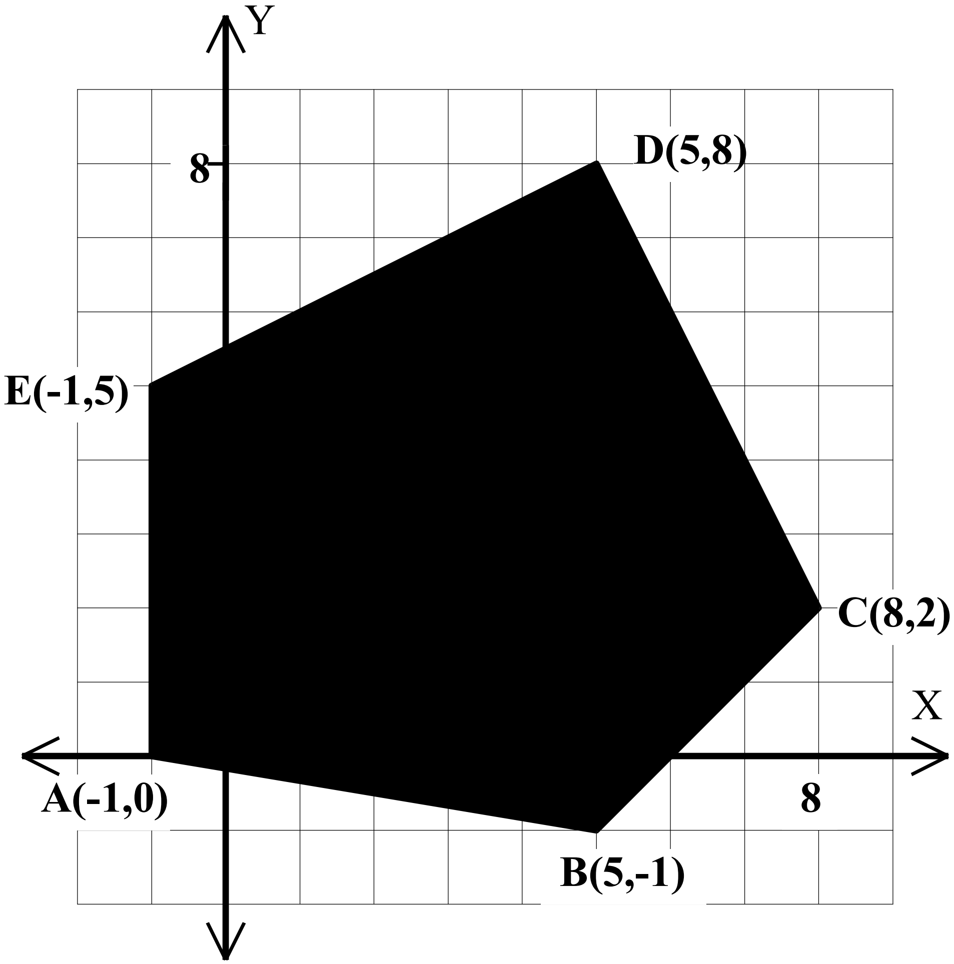

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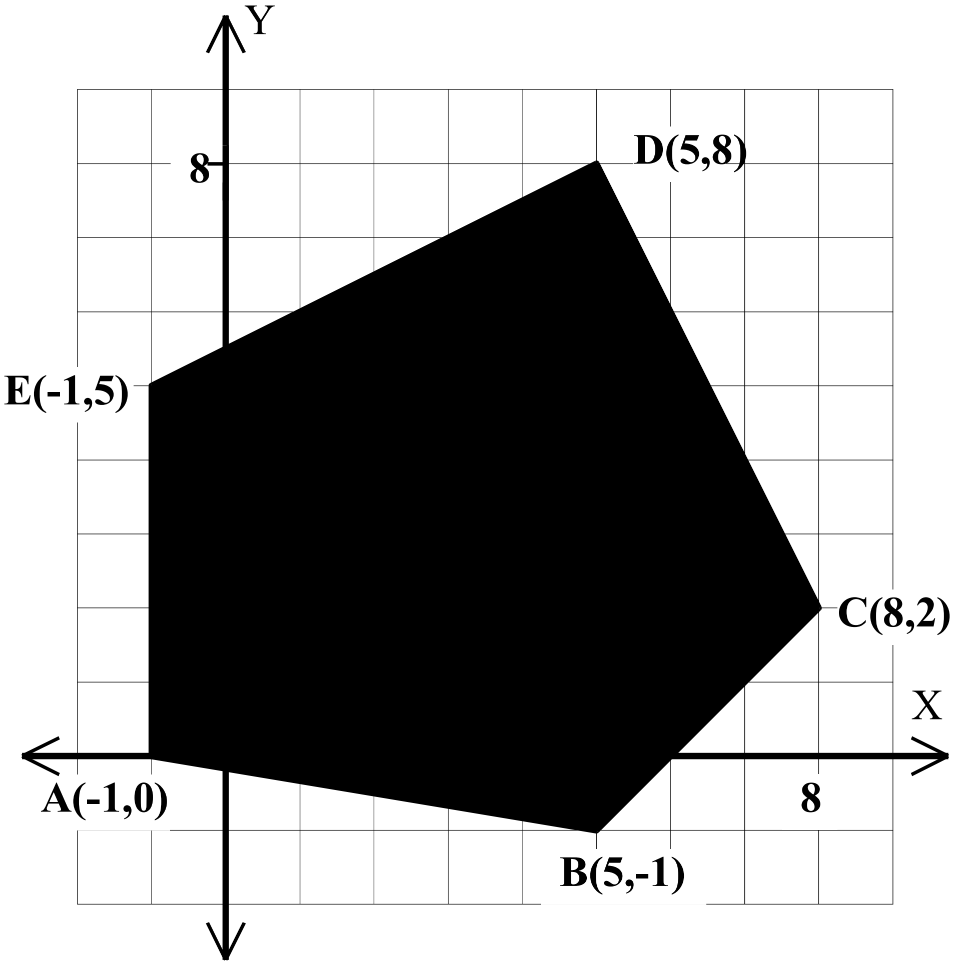
Algebra II Class Worksheet #4 Unit 4



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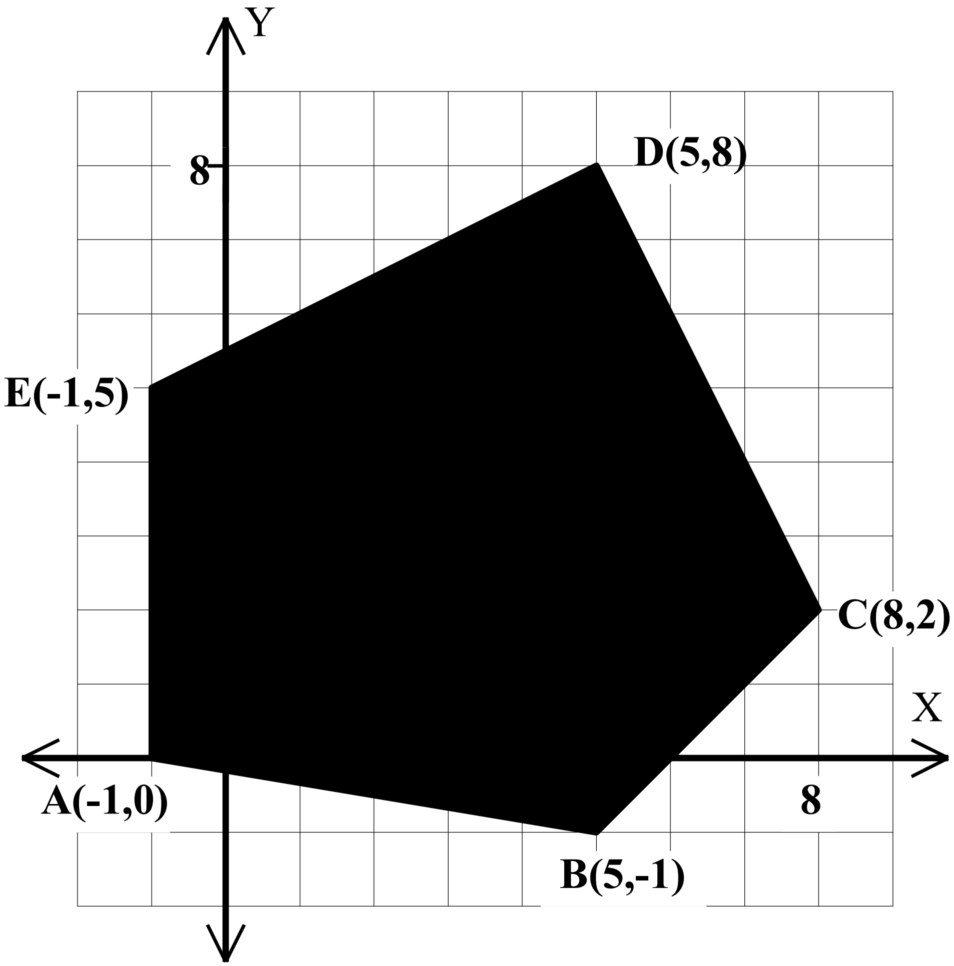
Algebra II Class Worksheet #4 Unit 4



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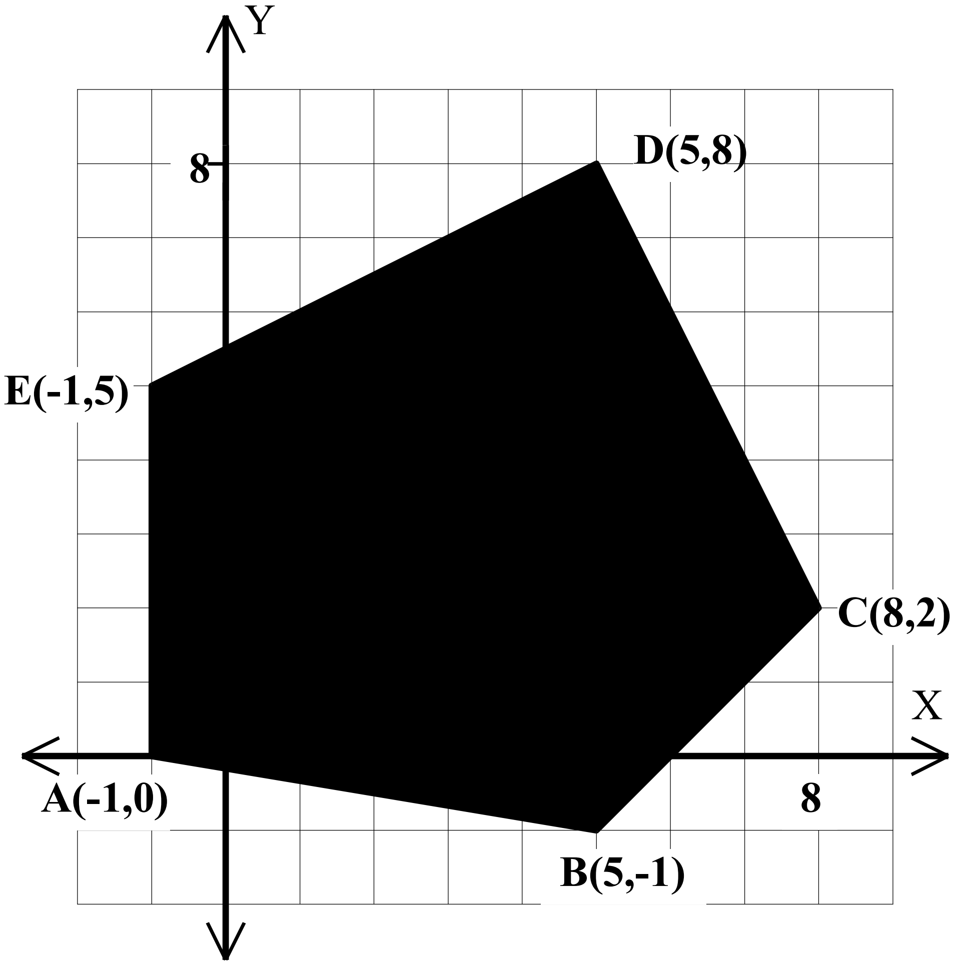

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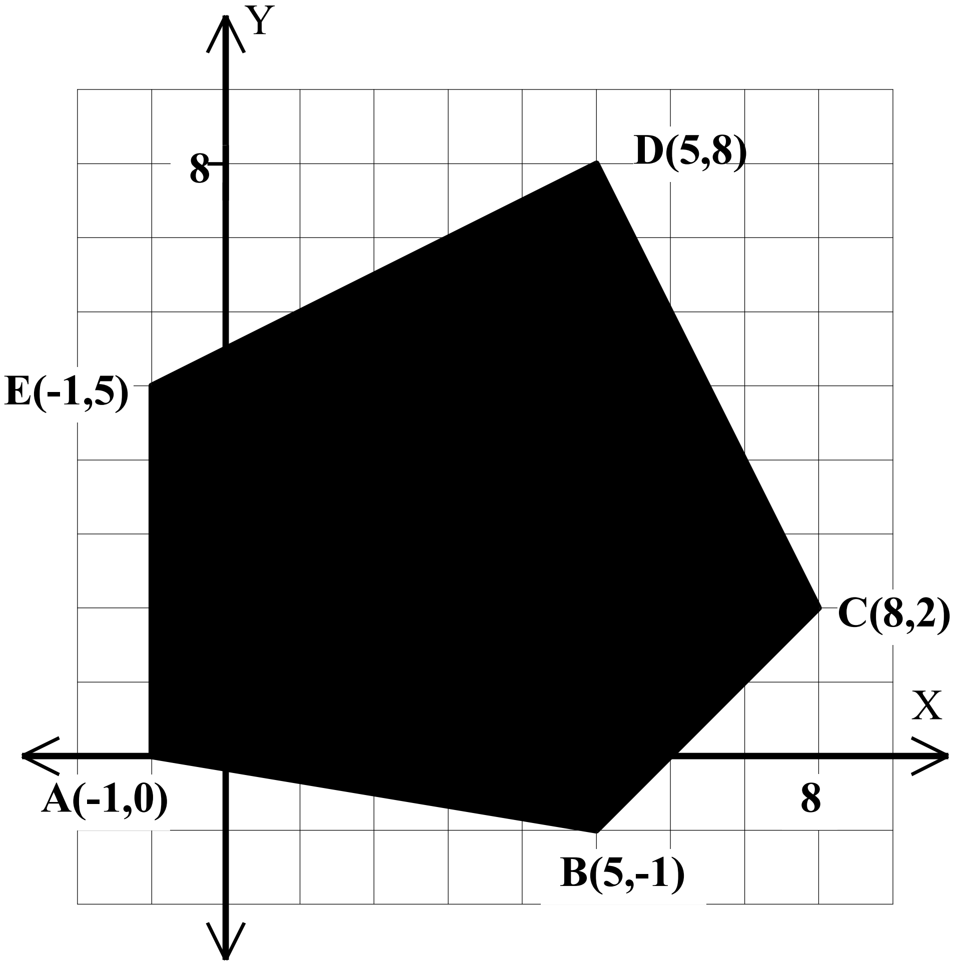
Algebra II   Class Worksheet #4   Unit 4



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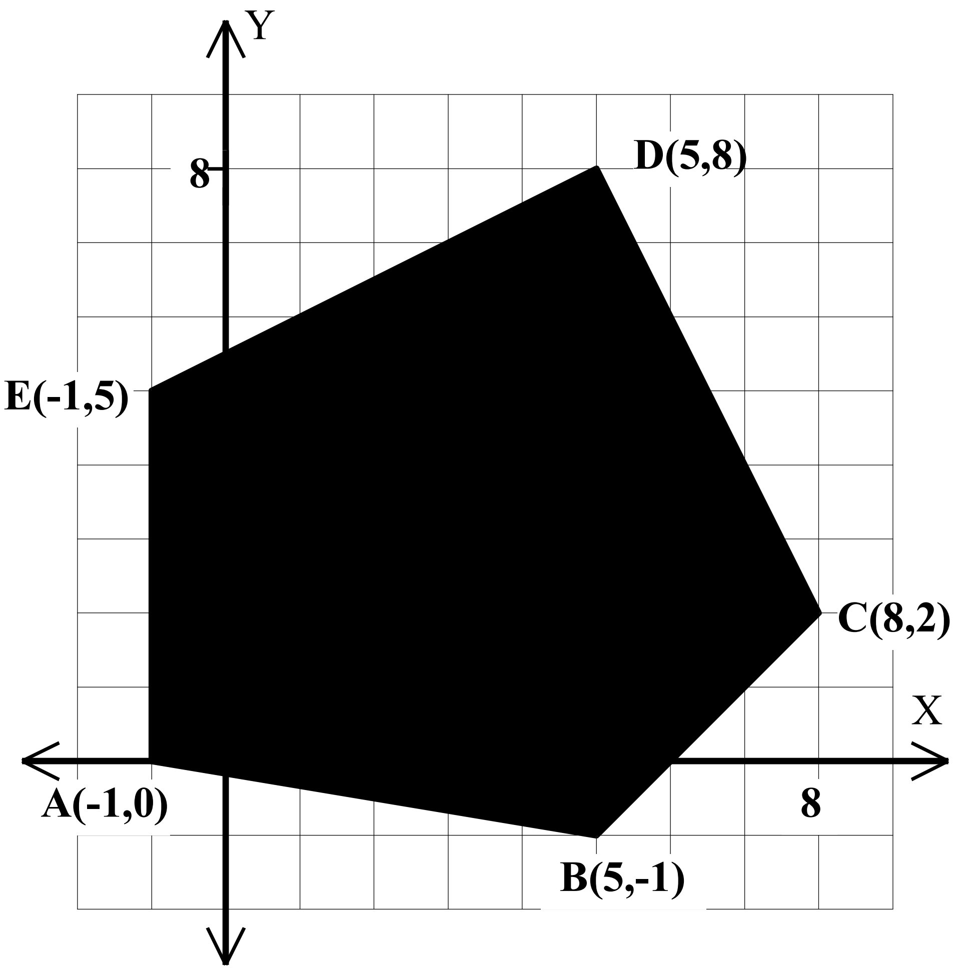

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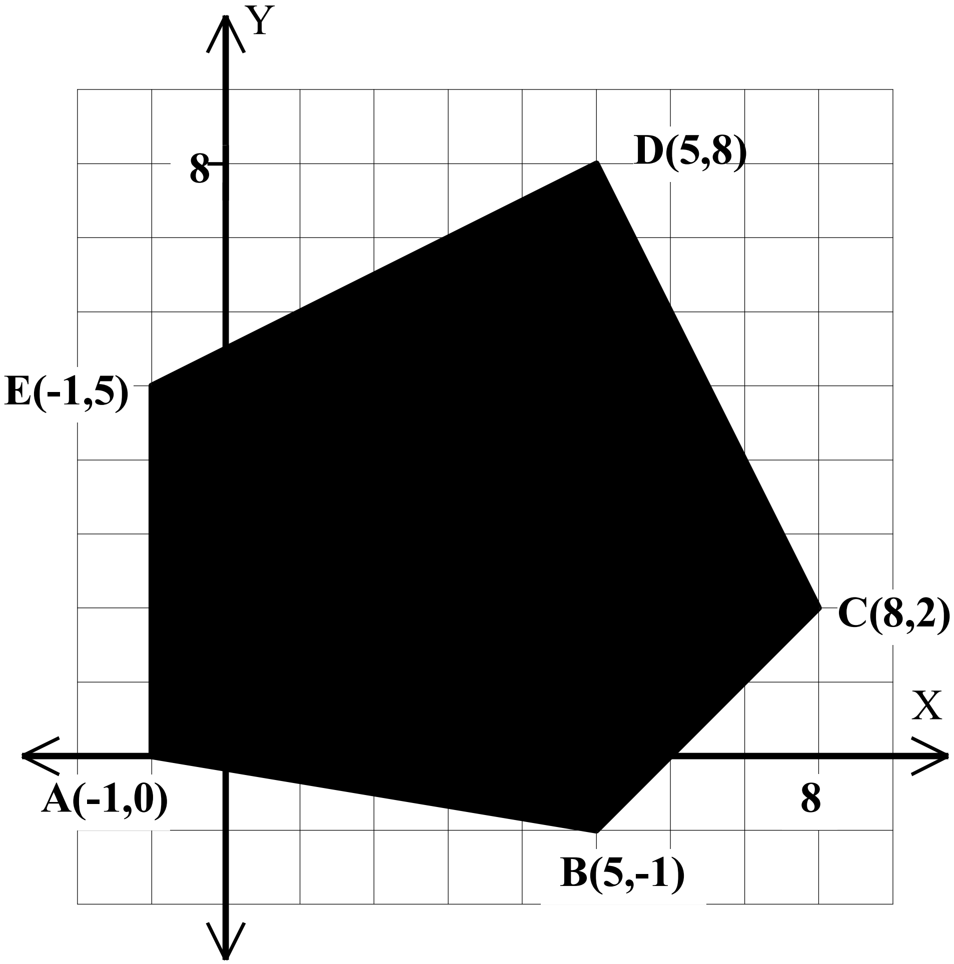
Algebra II Class Worksheet #4 Unit 4



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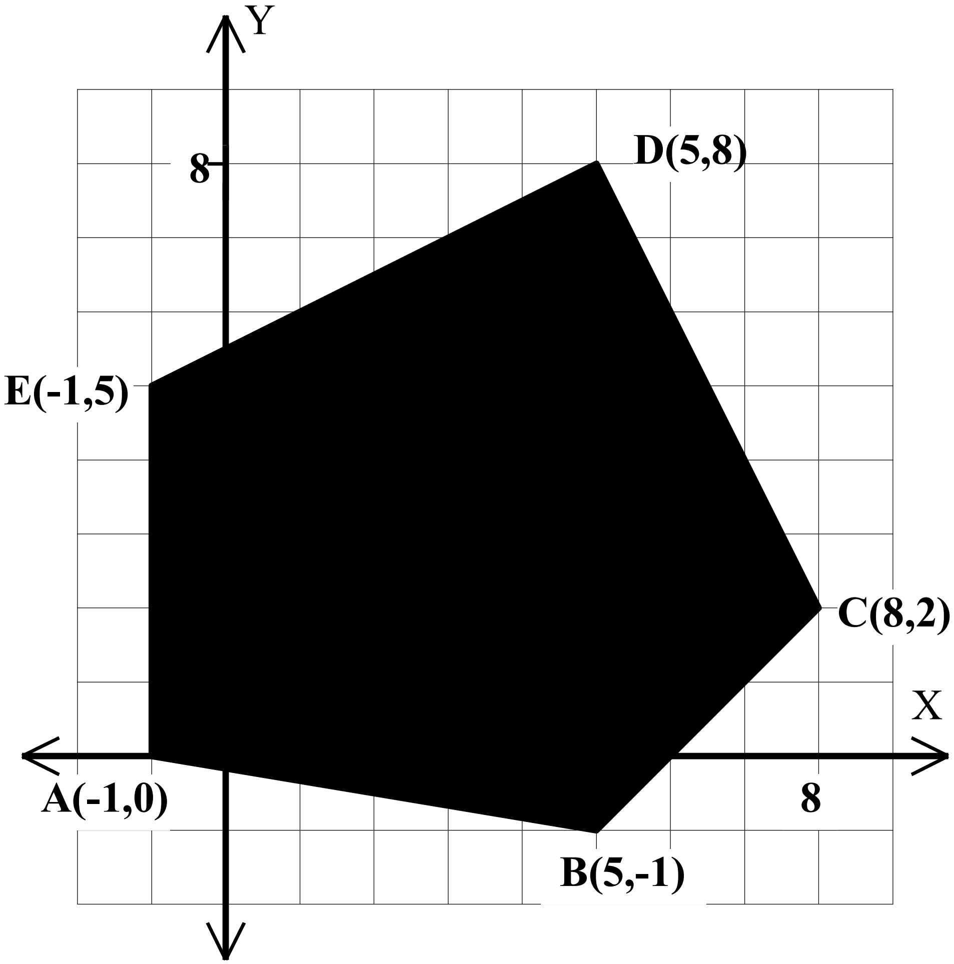

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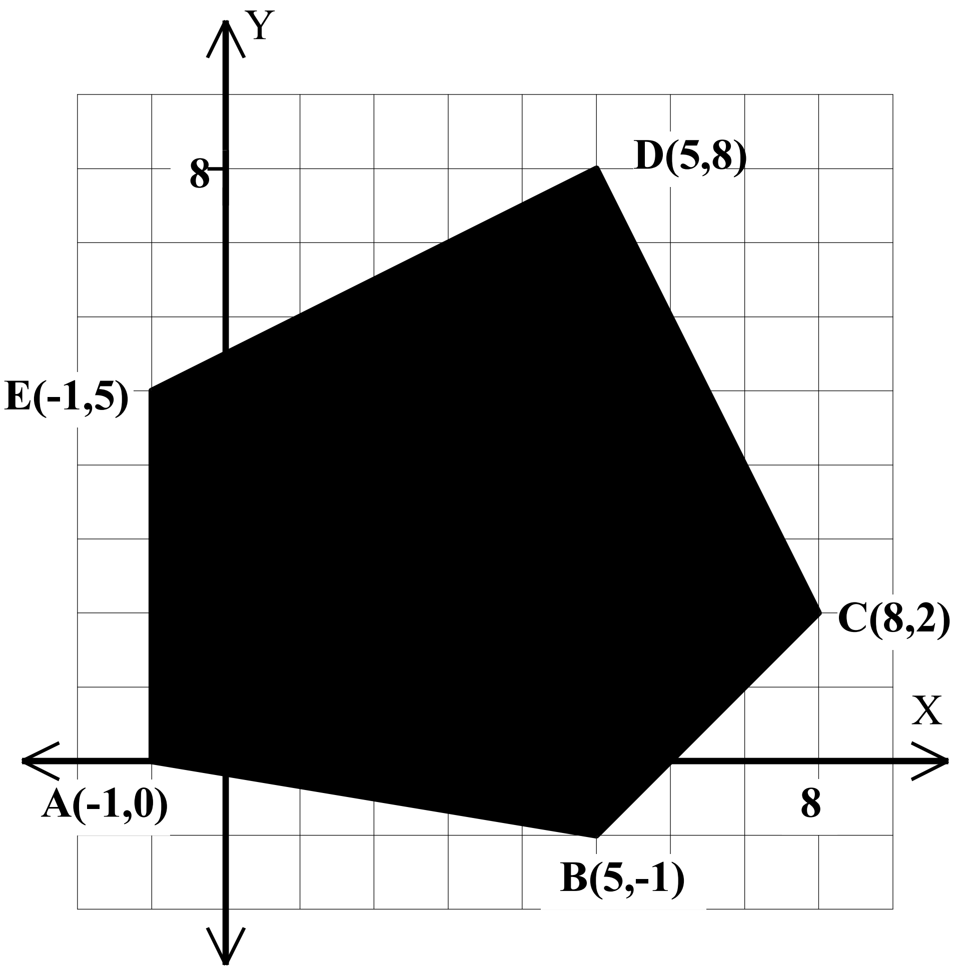
Algebra II Class Worksheet #4 Unit 4



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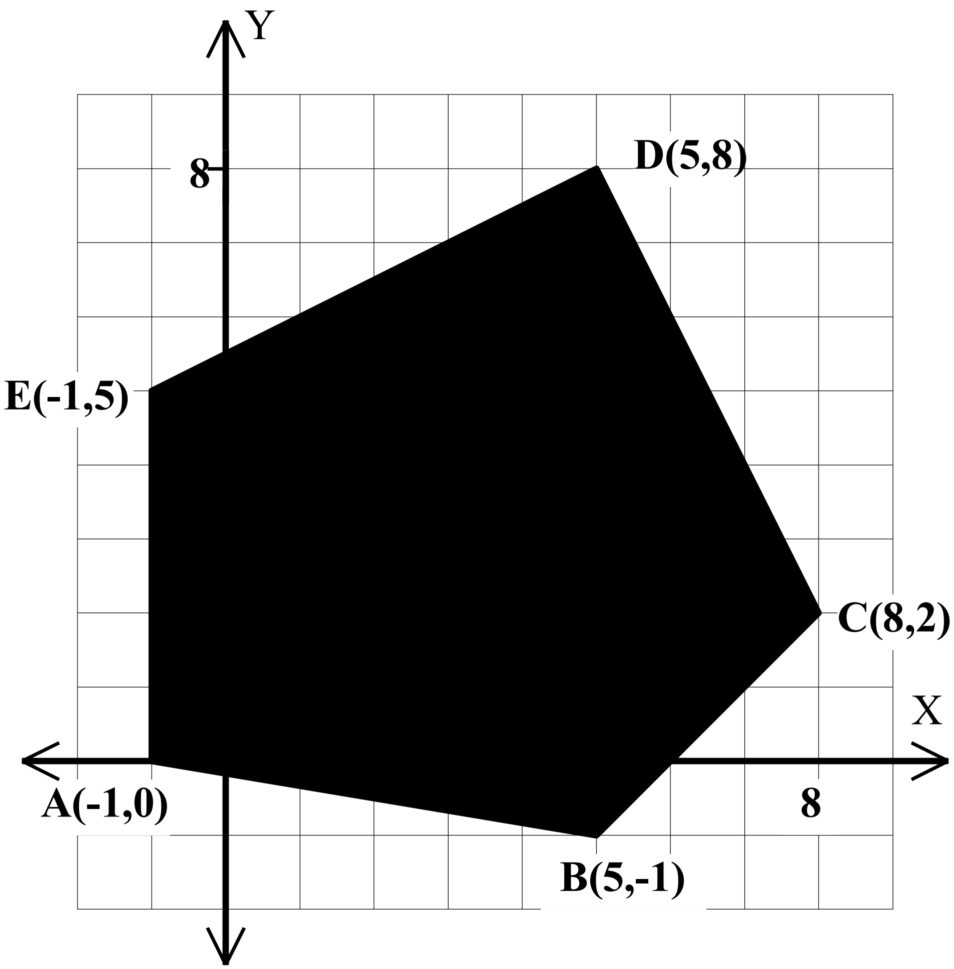
Algebra II Class Worksheet #4 Unit 4



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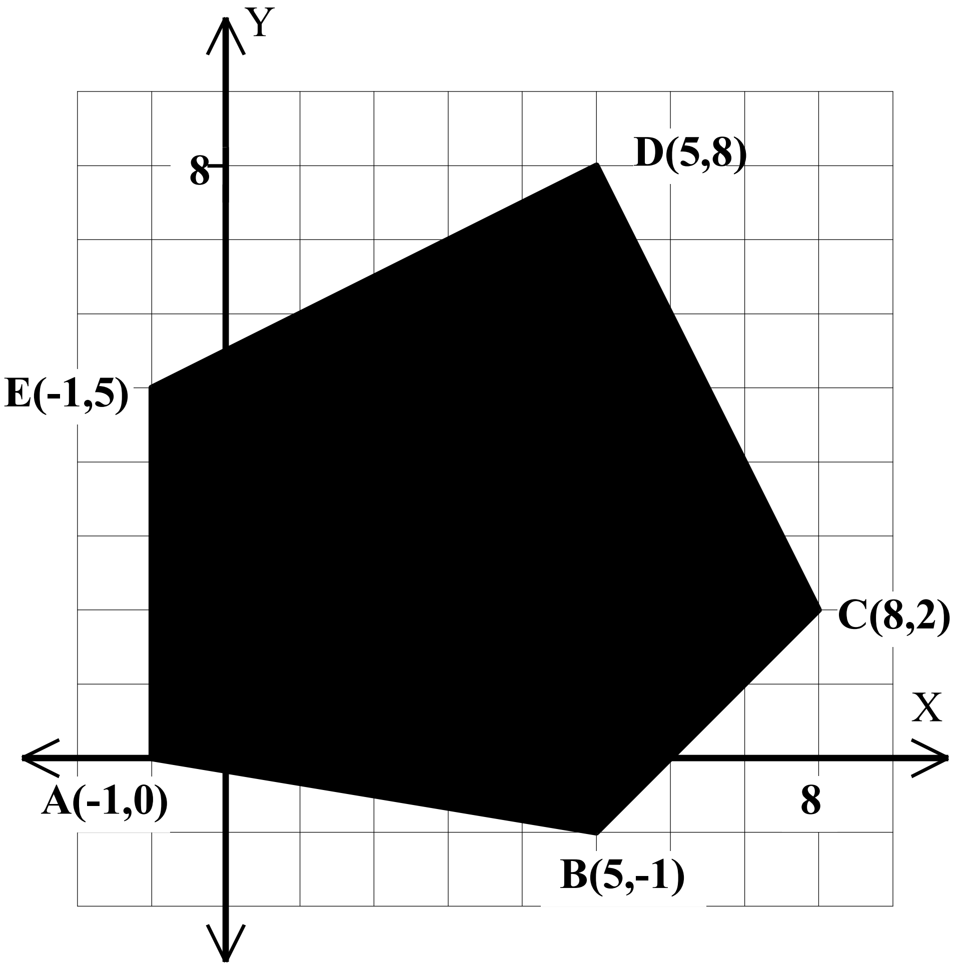

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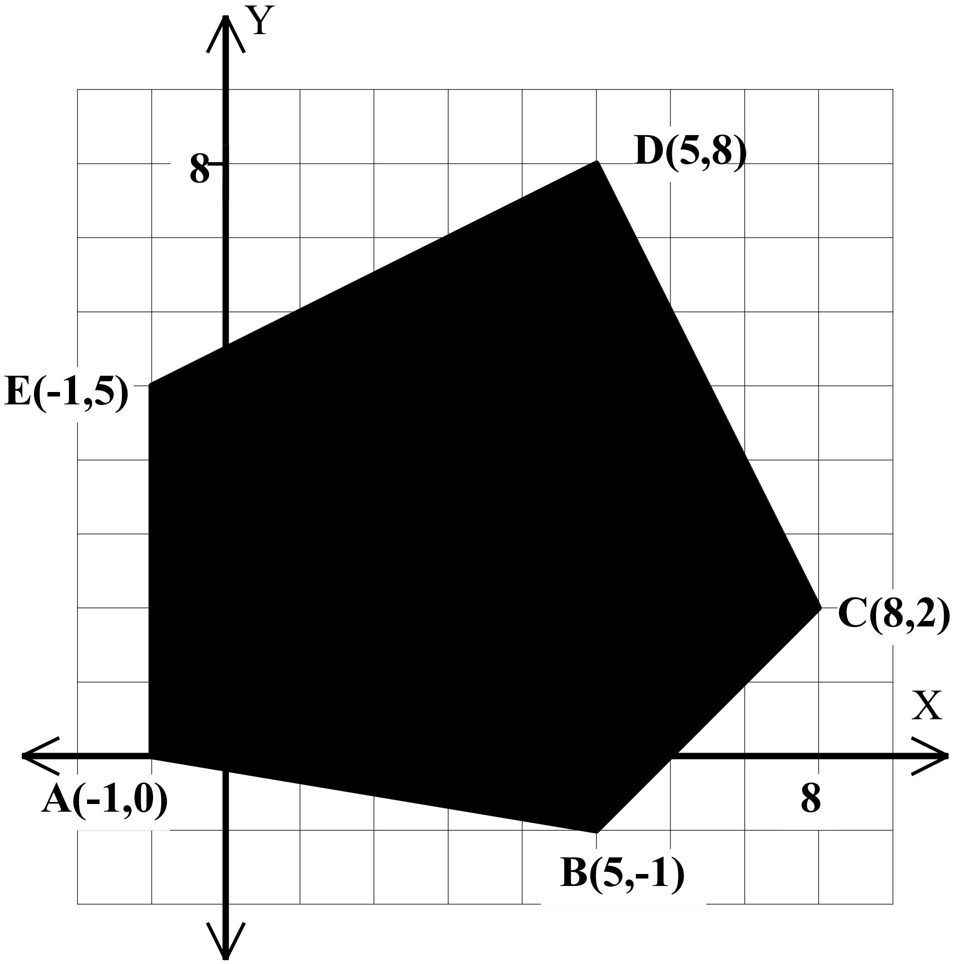

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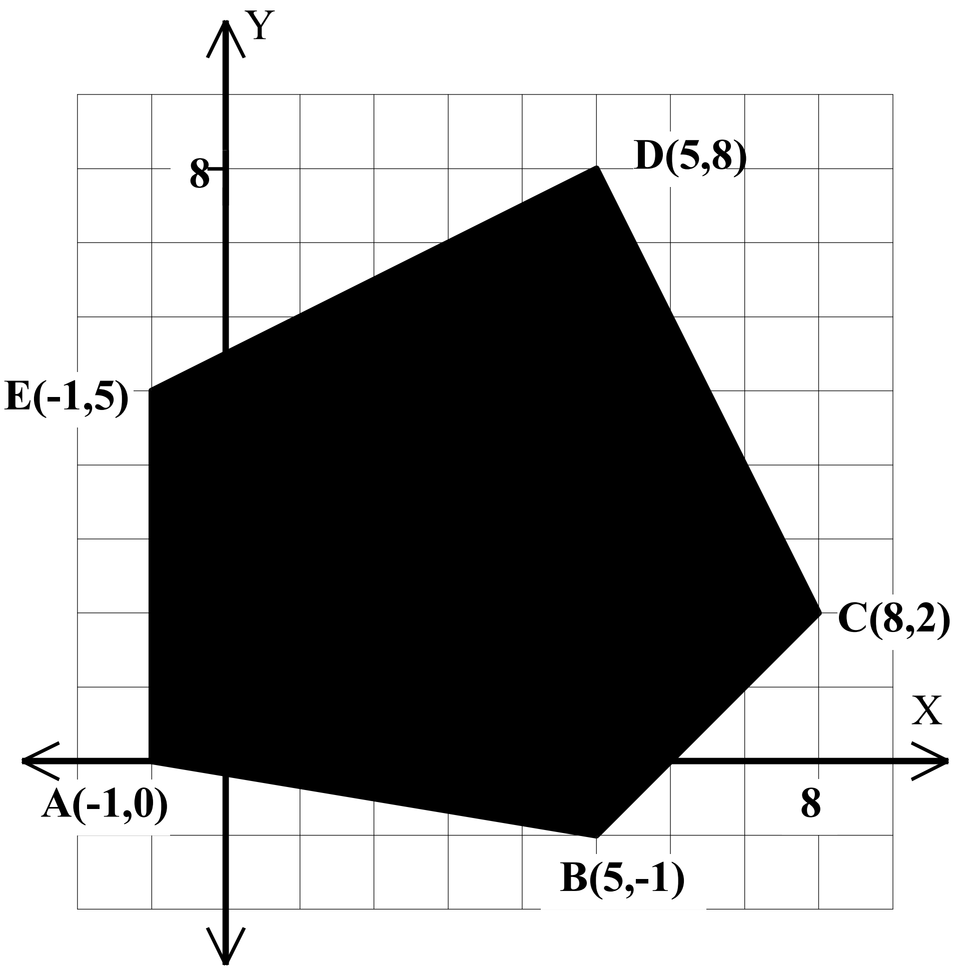

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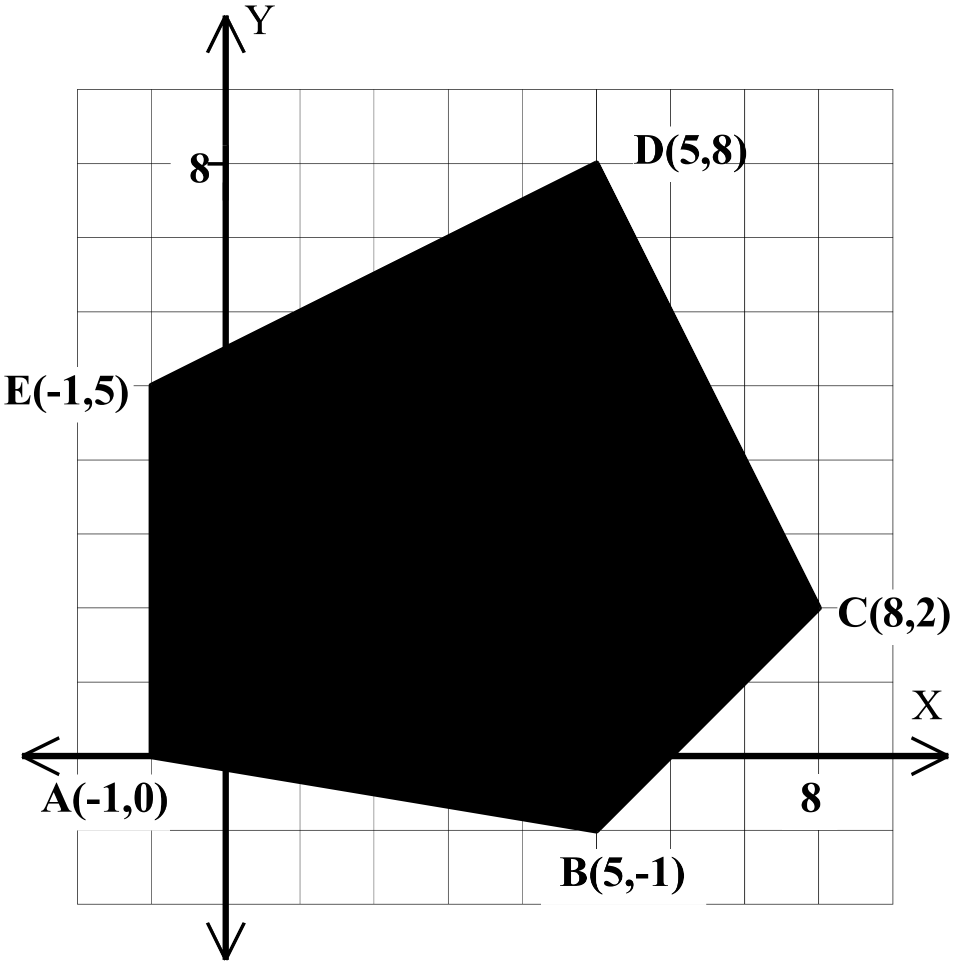
Algebra II Class Worksheet #4 Unit 4



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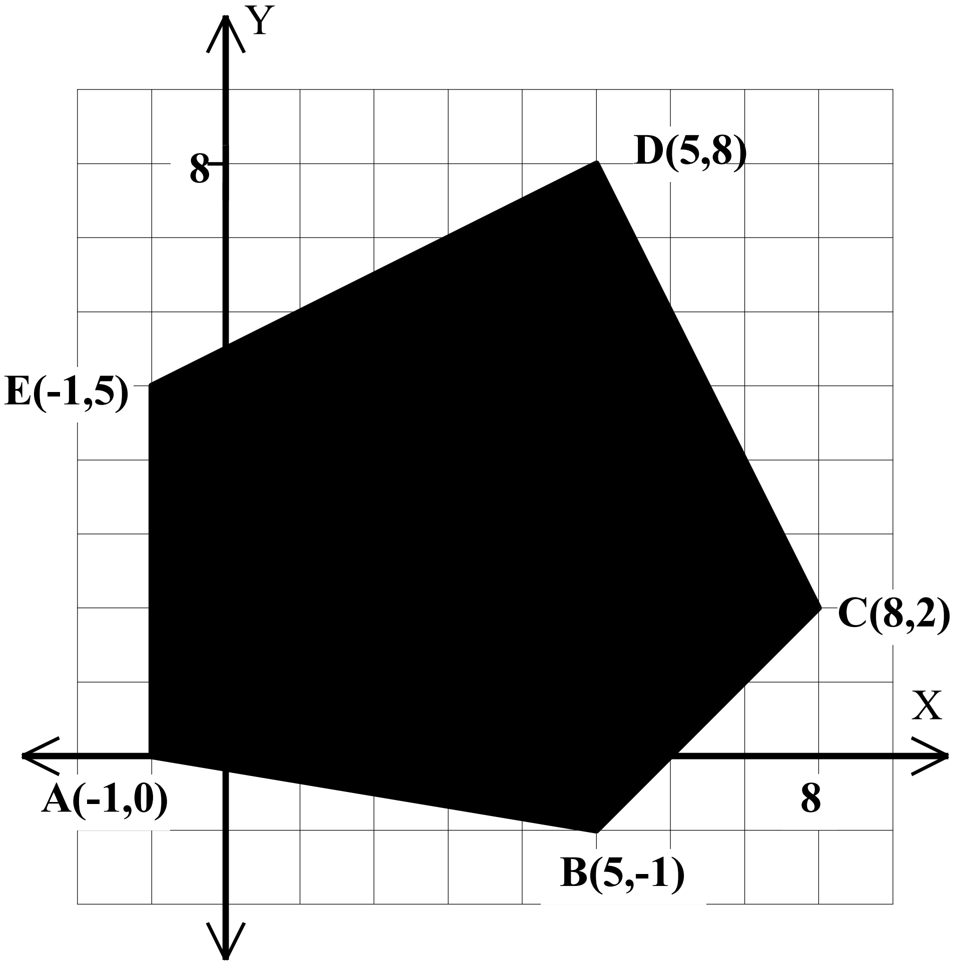

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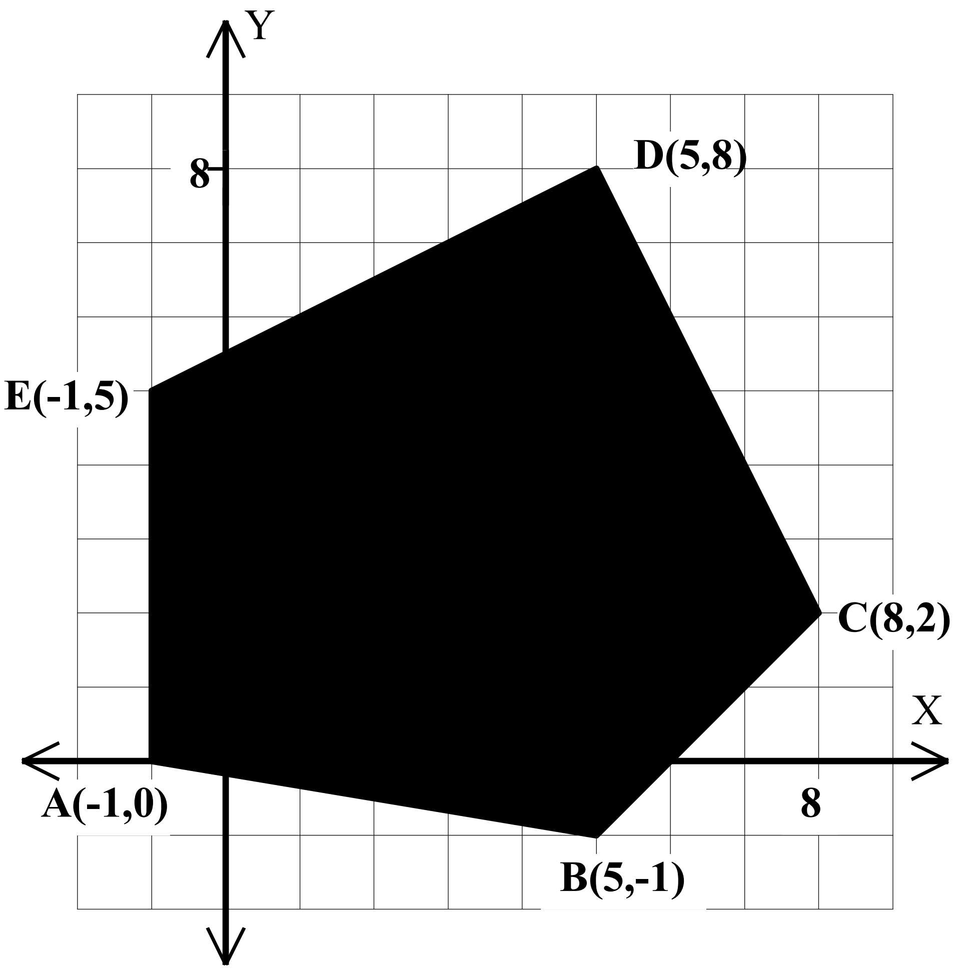

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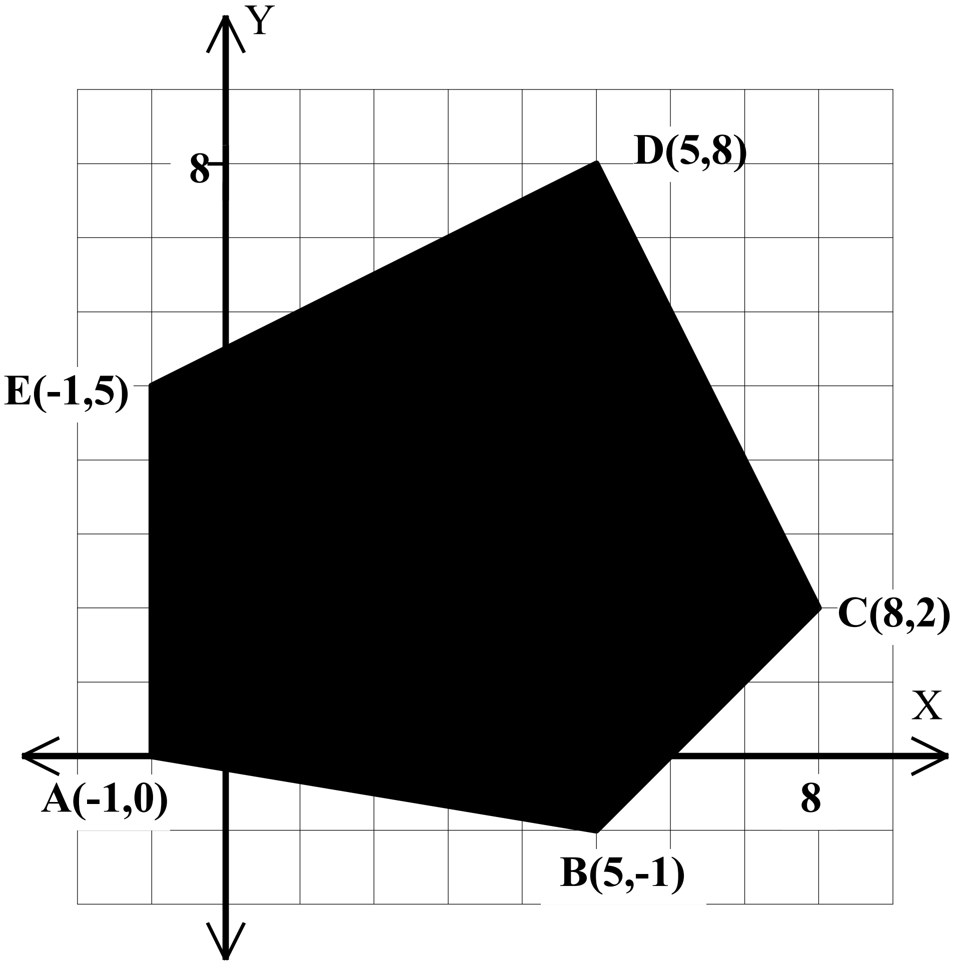

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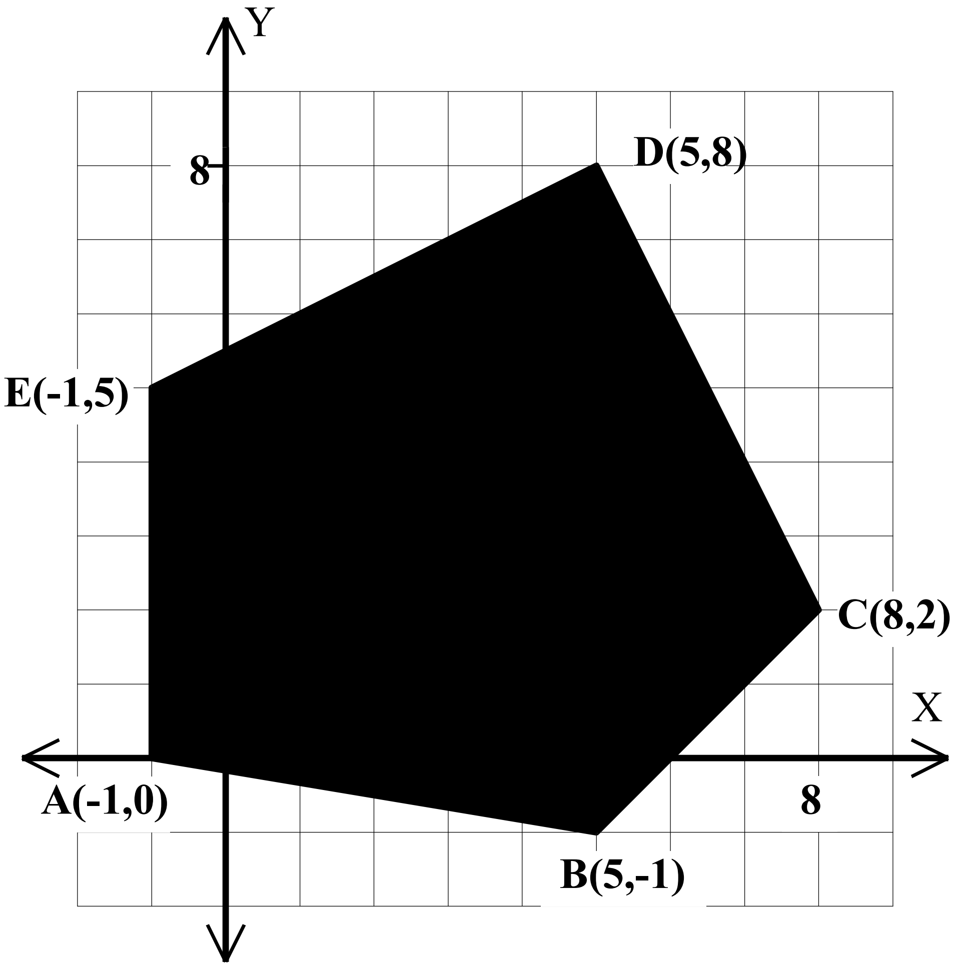

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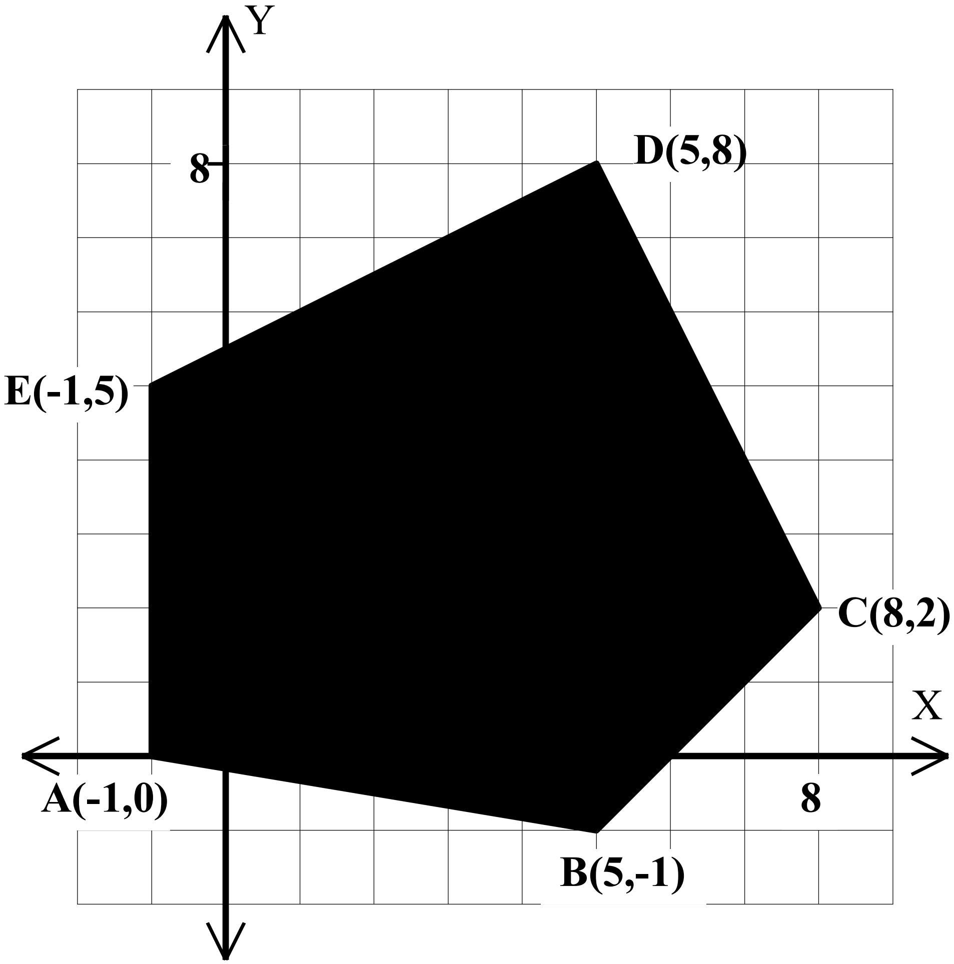

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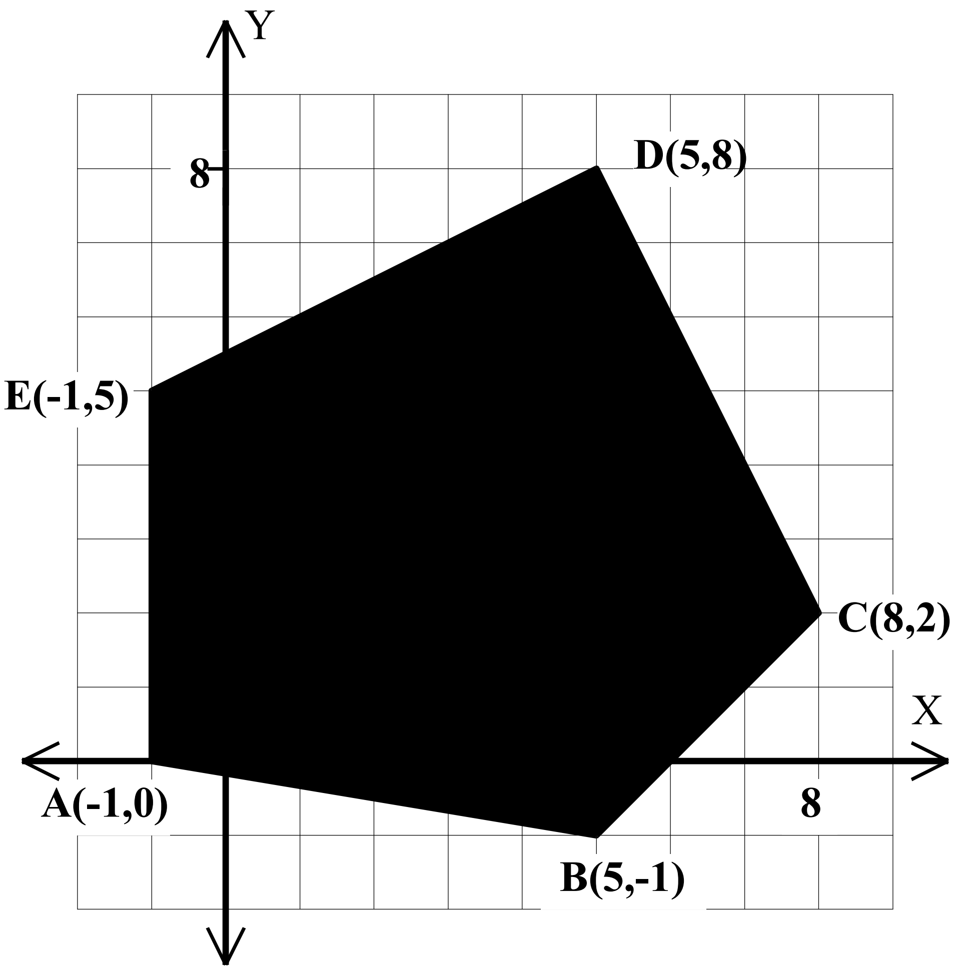

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T_{min} = ______ at ________

At A(-1,0) $\Rightarrow$ T = -1 + 0 = **-1**

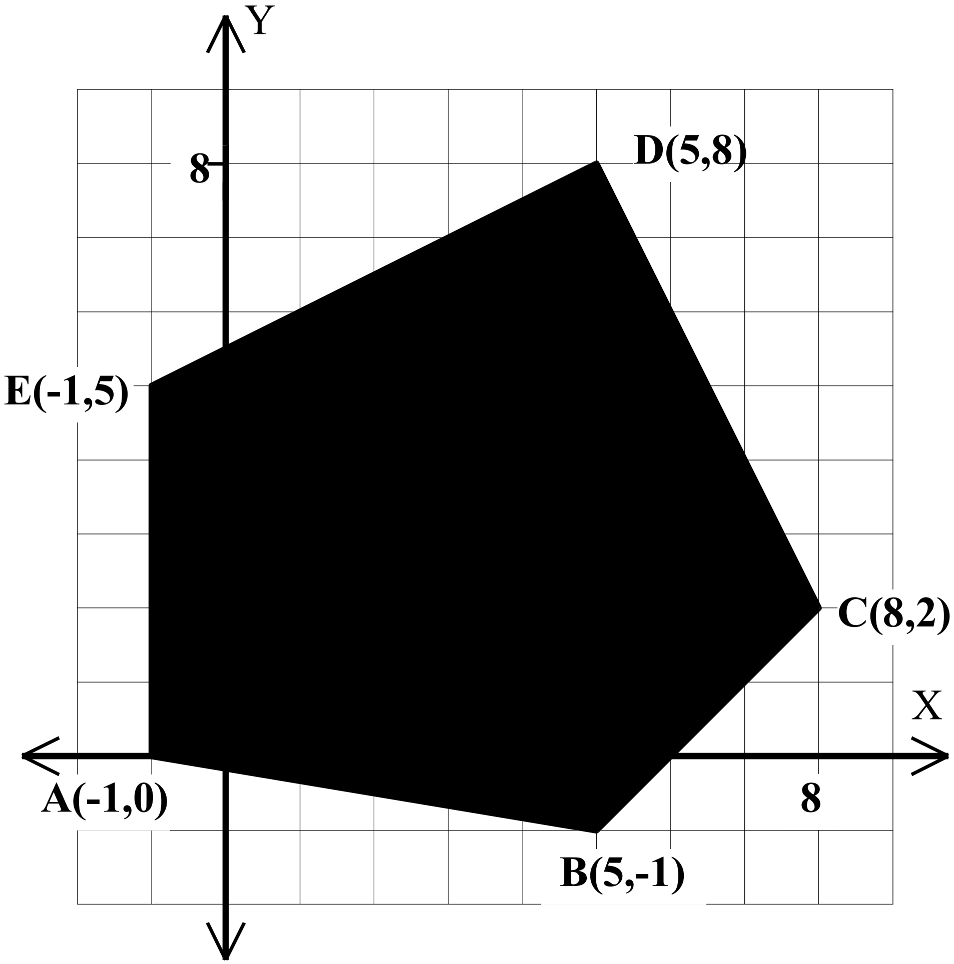
At B(5,-1) $\Rightarrow$ T = 5 + -2 = **3**

At C(8,2) $\Rightarrow$ T = 8 + 4 = **12**

At D(5,8) $\Rightarrow$ T = 5 + 16 = **21**

At E(-1,5) $\Rightarrow$ T = -1 + 10 = **9**

Algebra II Class Worksheet #4 Unit 4



The **maximum** and the **minimum** values of T will occur at a vertex of the region.

4. $T = x + 2y$

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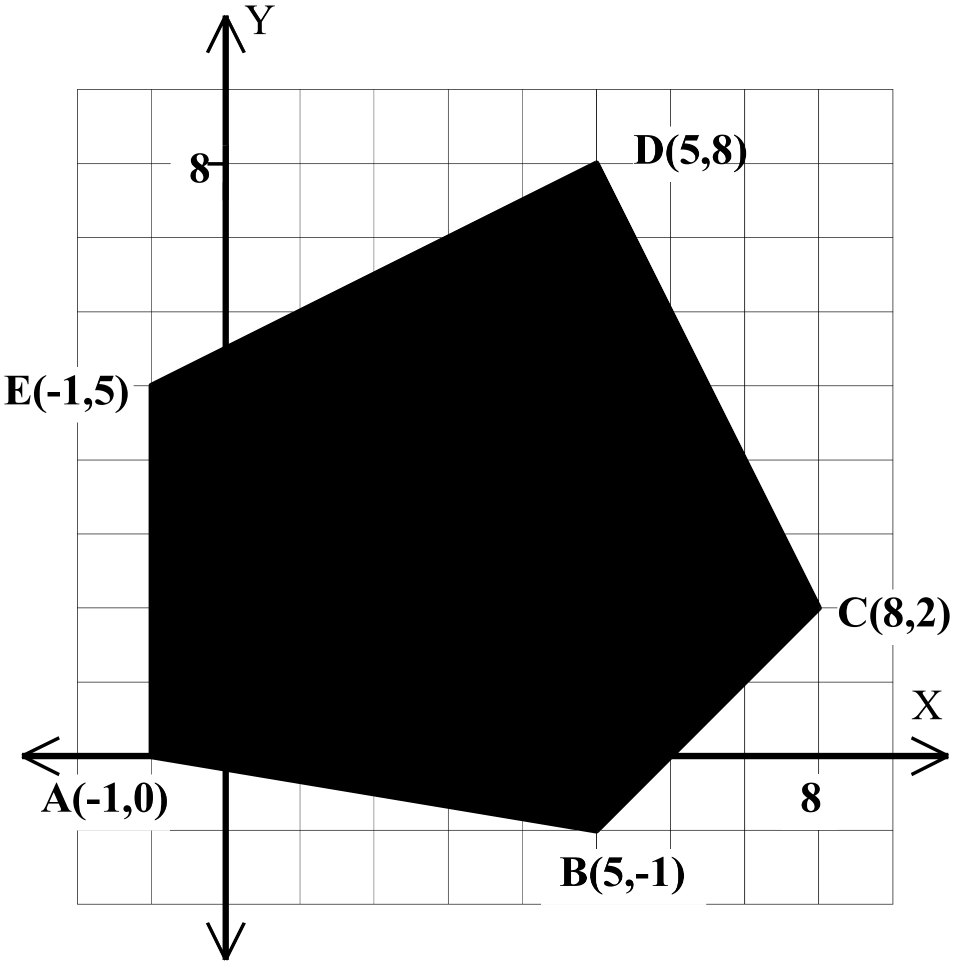
Algebra II   Class Worksheet #4   Unit 4



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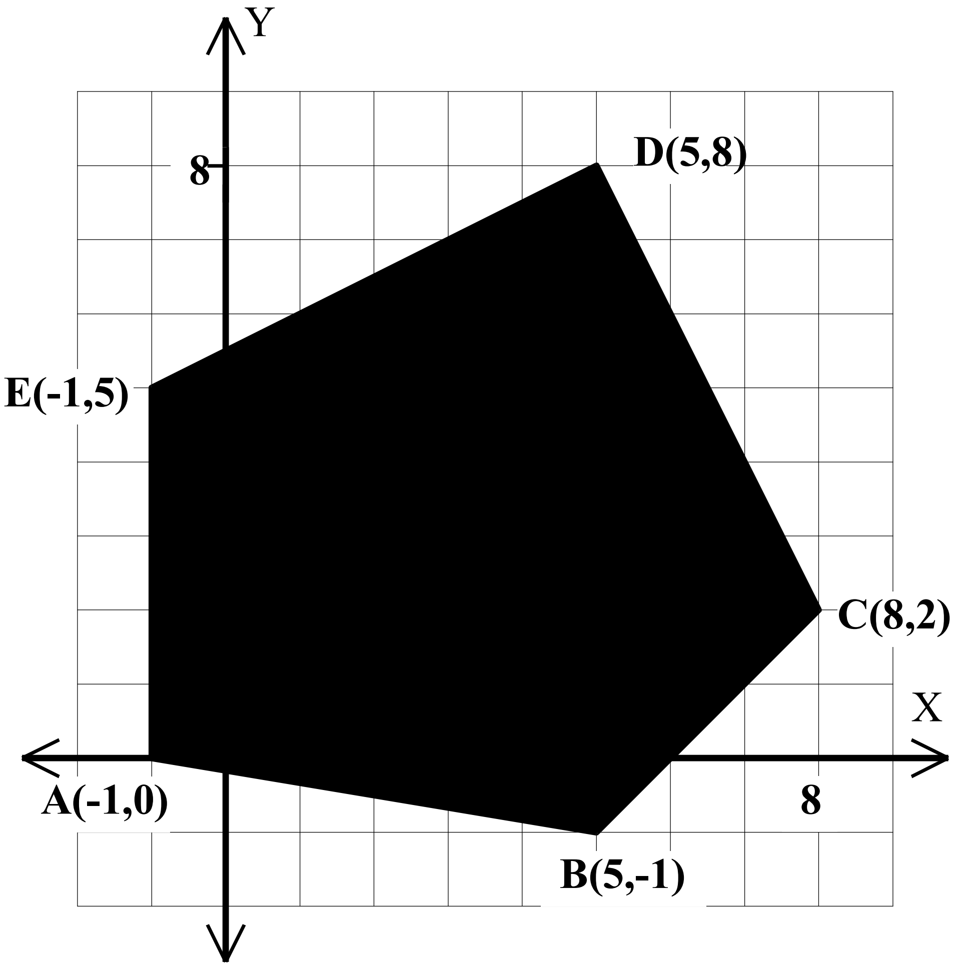
Algebra II Class Worksheet #4 Unit 4



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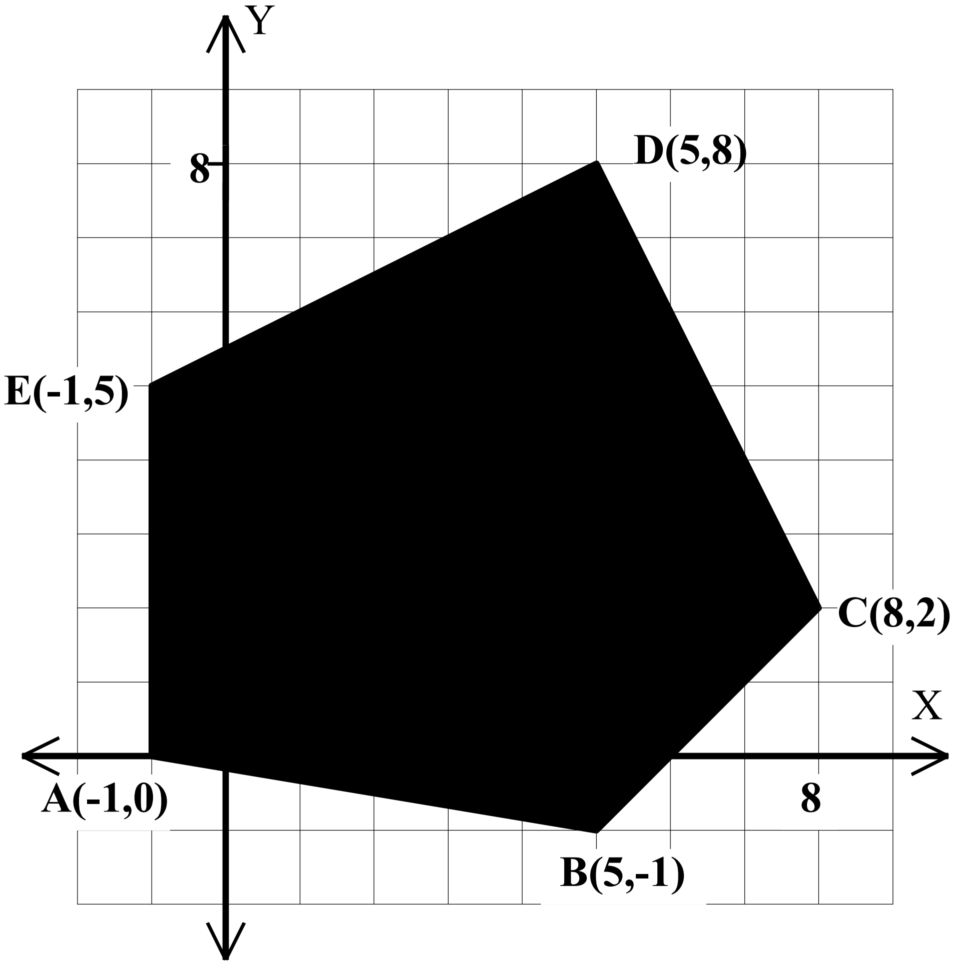
Algebra II Class Worksheet #4 Unit 4



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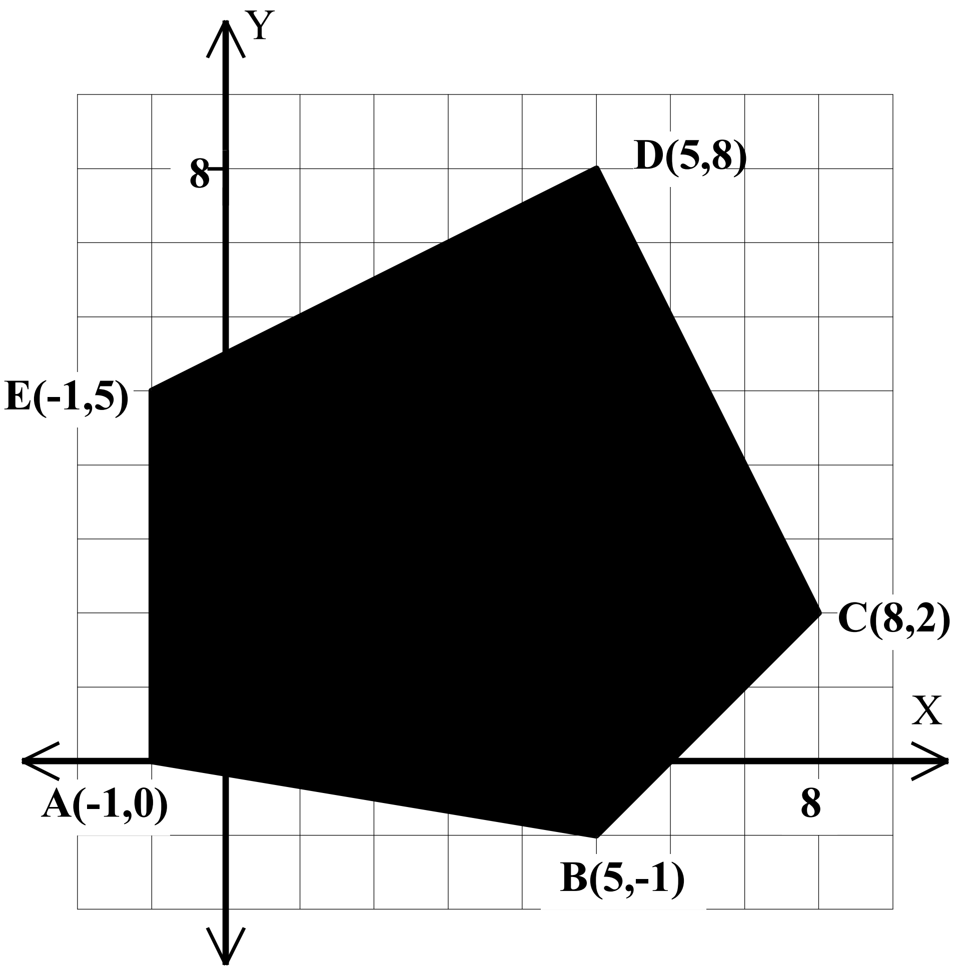
Algebra II Class Worksheet #4 Unit 4



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Algebra II Class Worksheet #4 Unit 4

Next, you are given a system of constraints and several objective functions. Graph the system and find the indicated maximum and minimum value of the functions and the vertex at which each occurs.

Algebra II   Class Worksheet #4   Unit 4

Questions 5-8

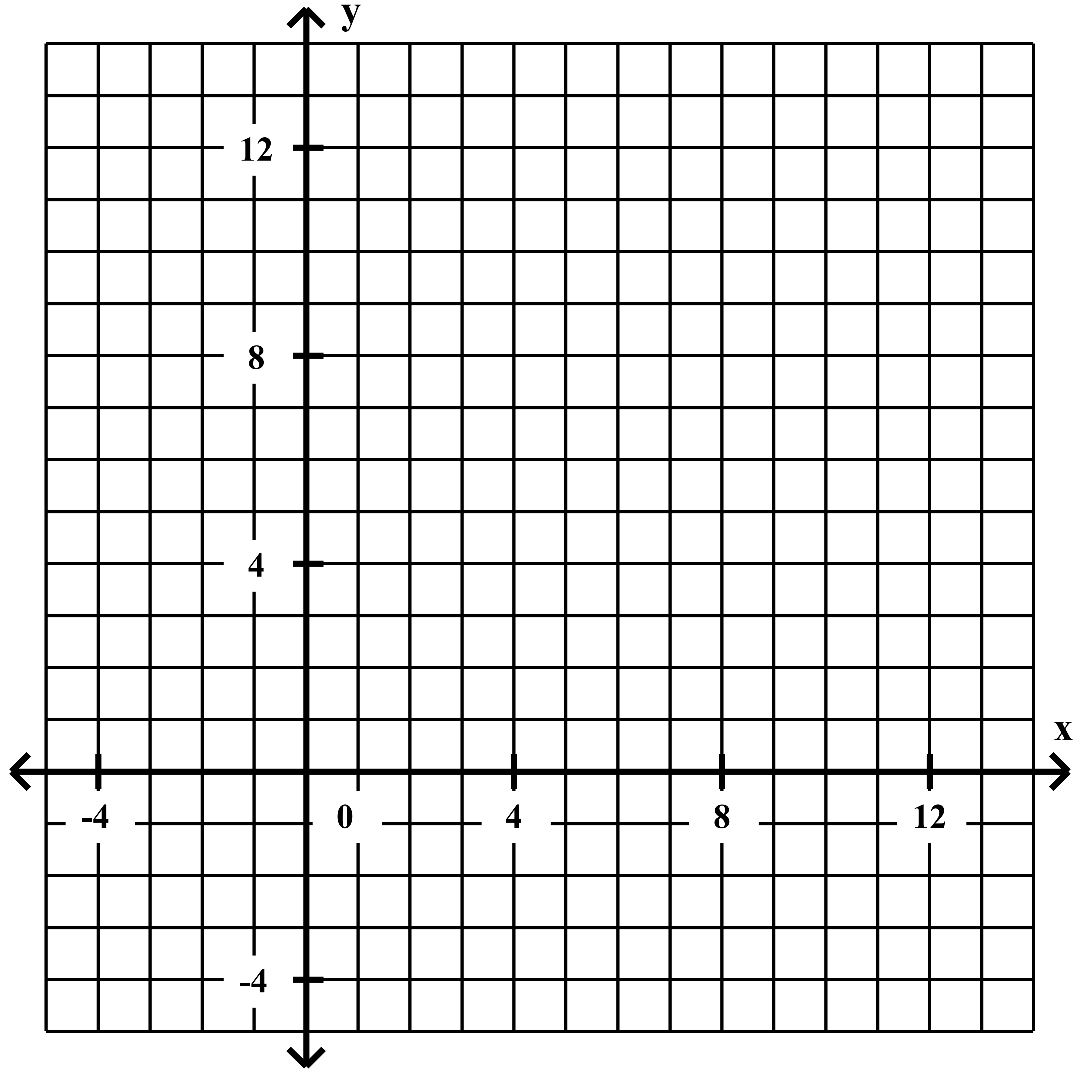
$x + 3 \geq 0$

$x + y \geq 0$

$2x - 3y \leq 15$

$2x + 3y \leq 36$

$x - 3y \geq -27$



Algebra II   Class Worksheet #4   Unit 4

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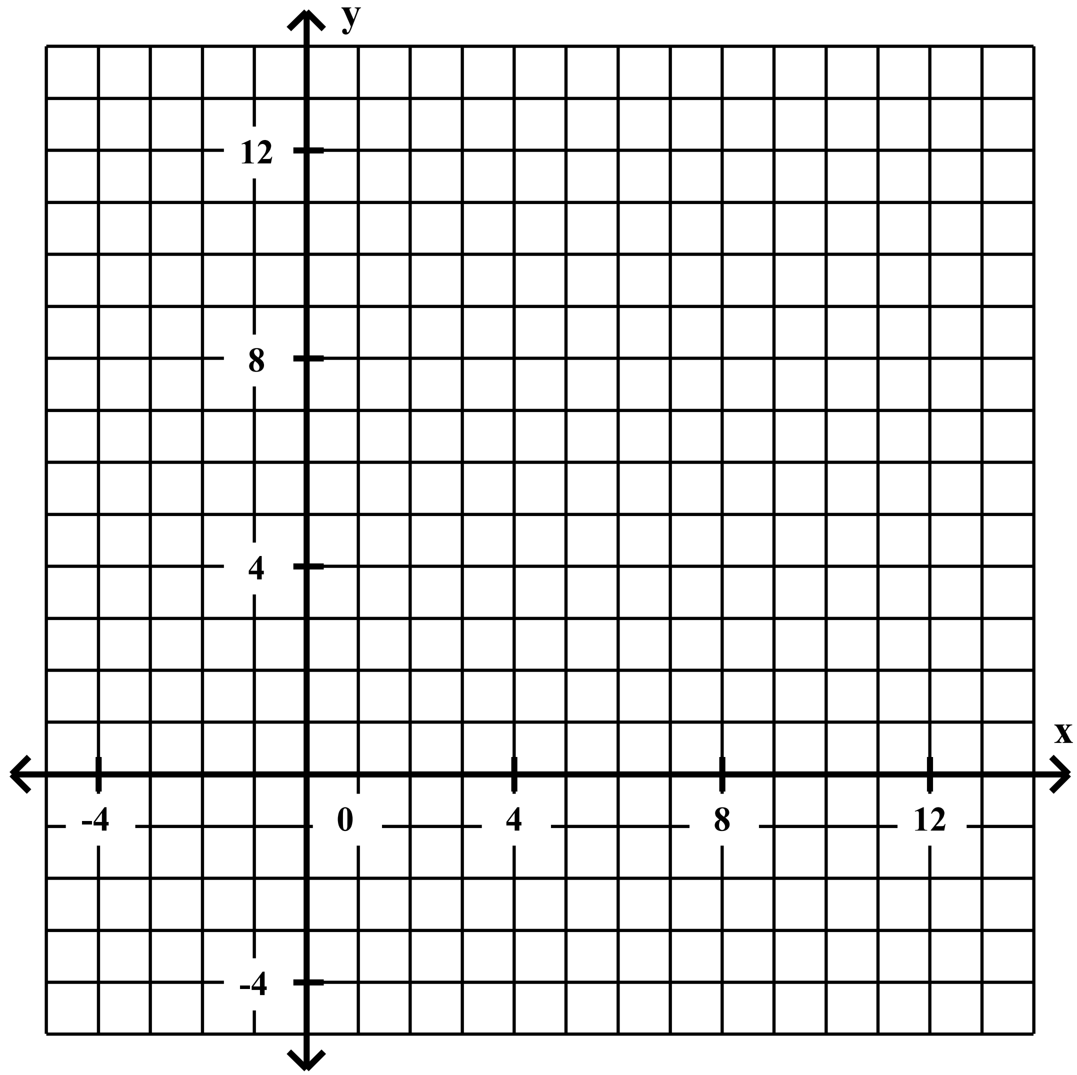

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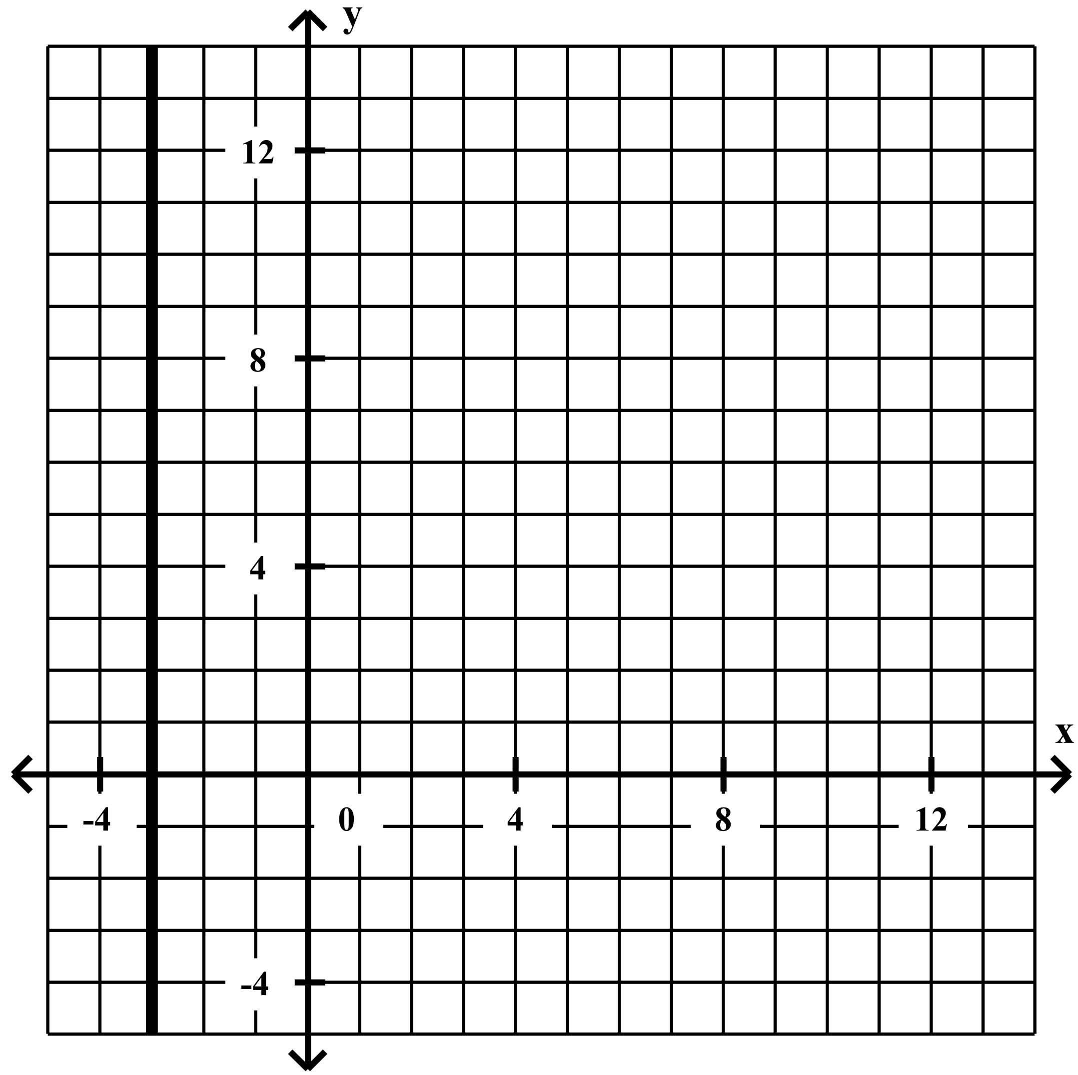

Algebra II   Class Worksheet #4   Unit 4

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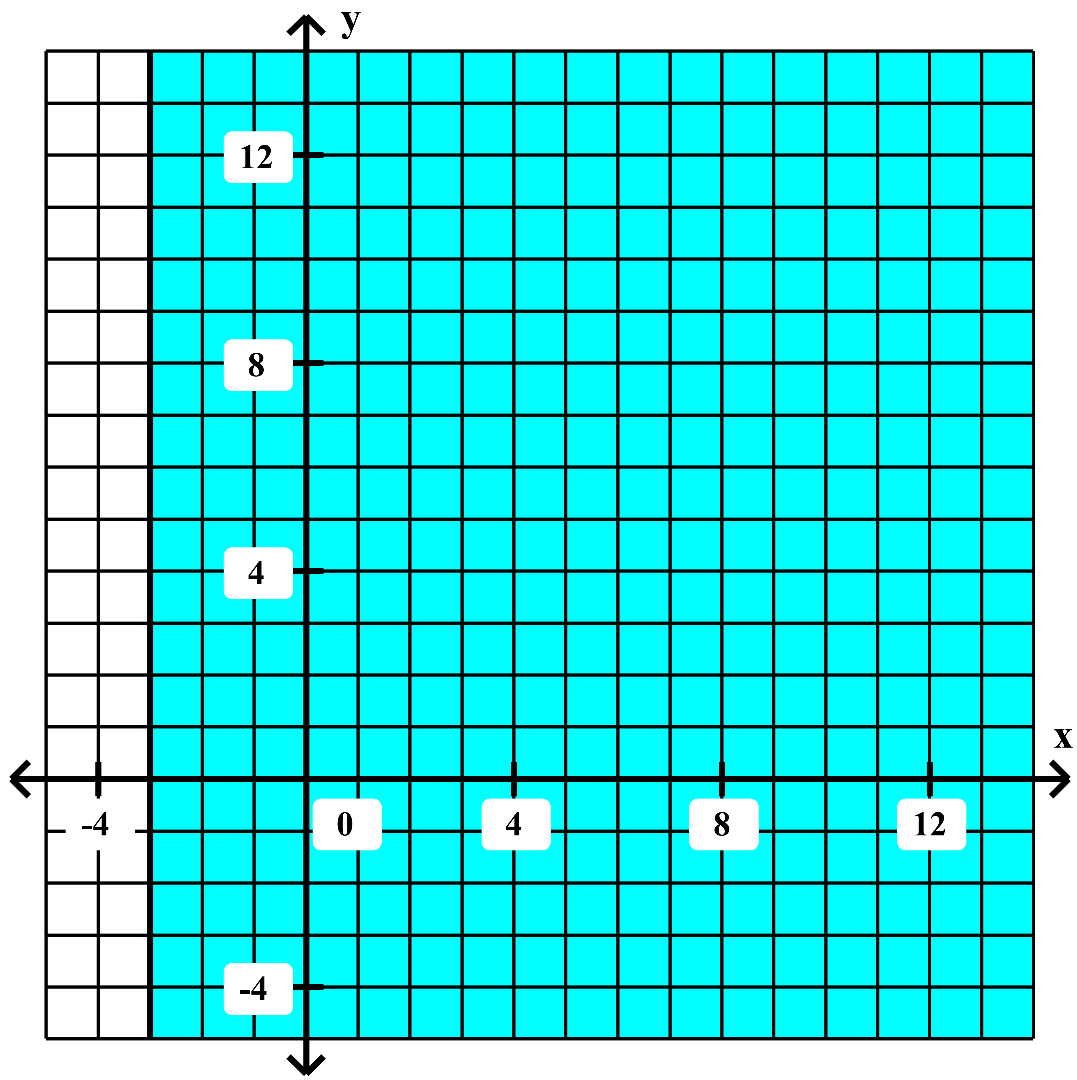

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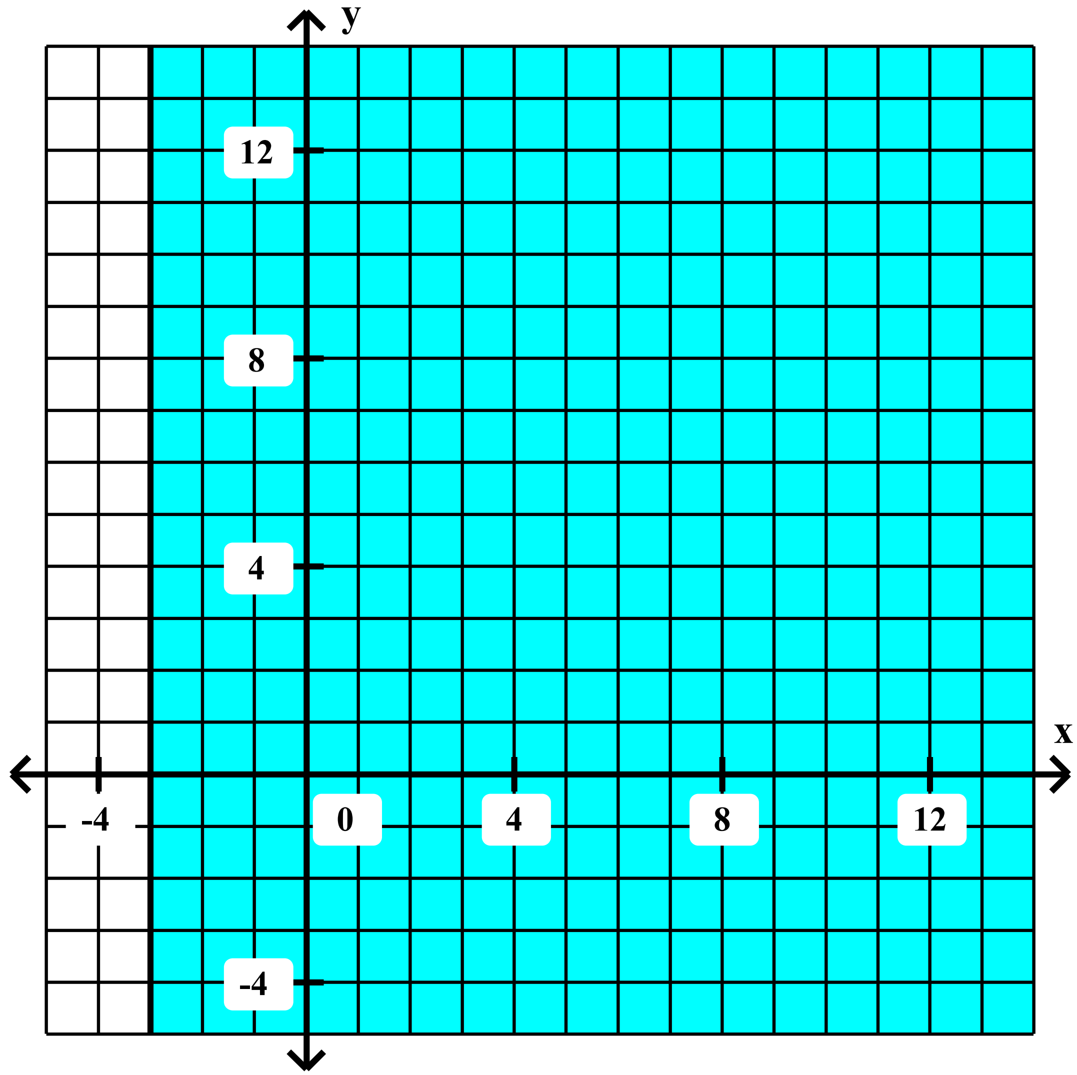

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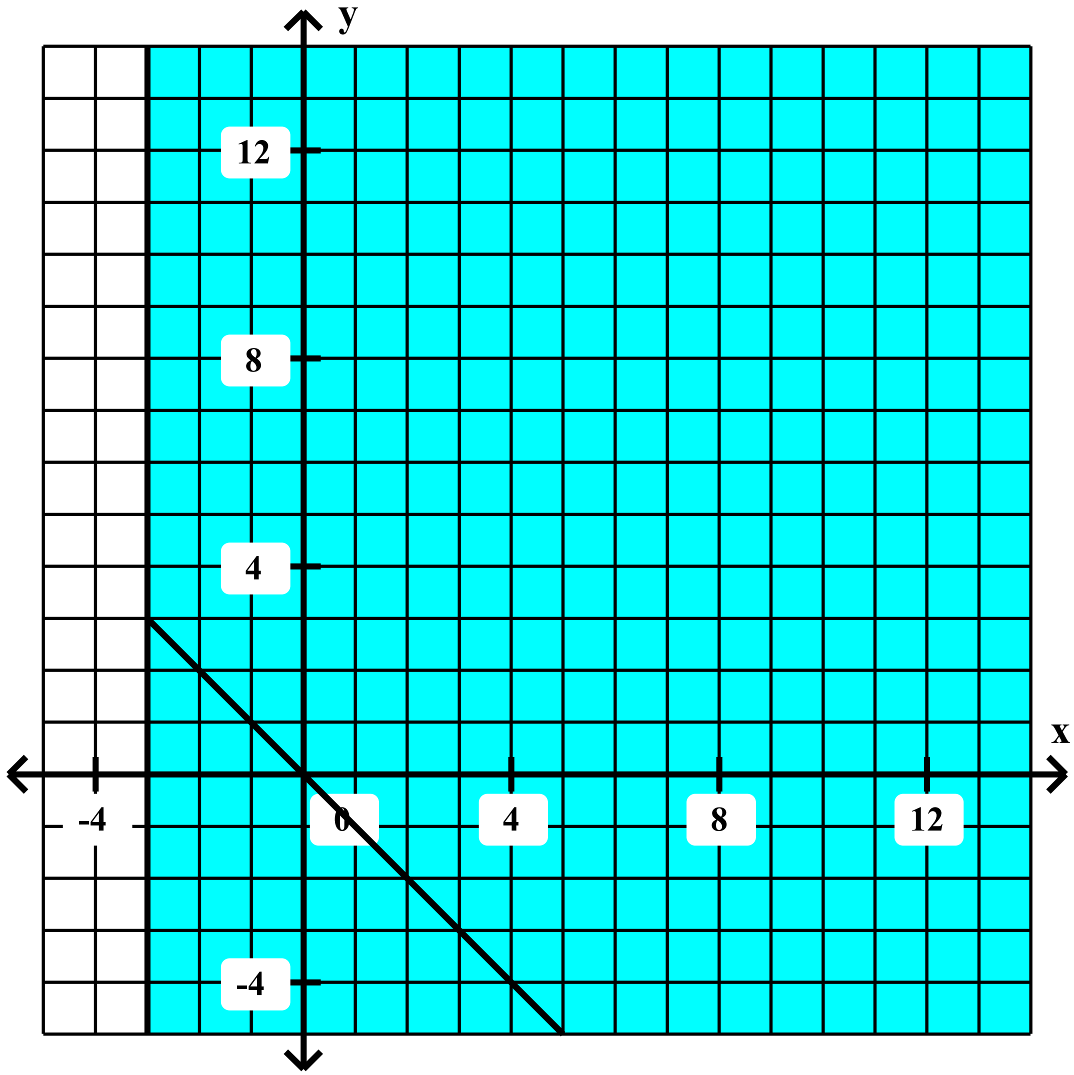

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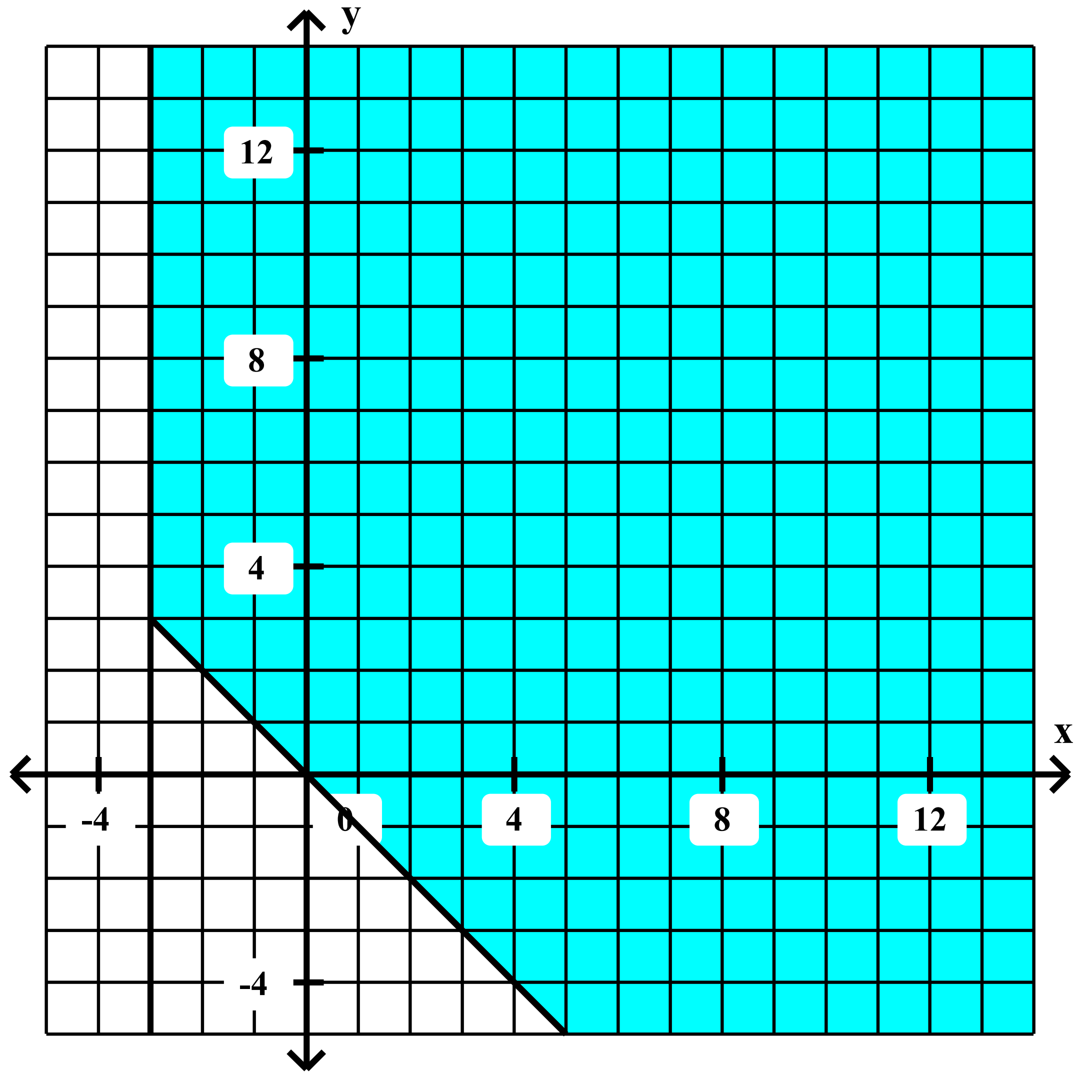

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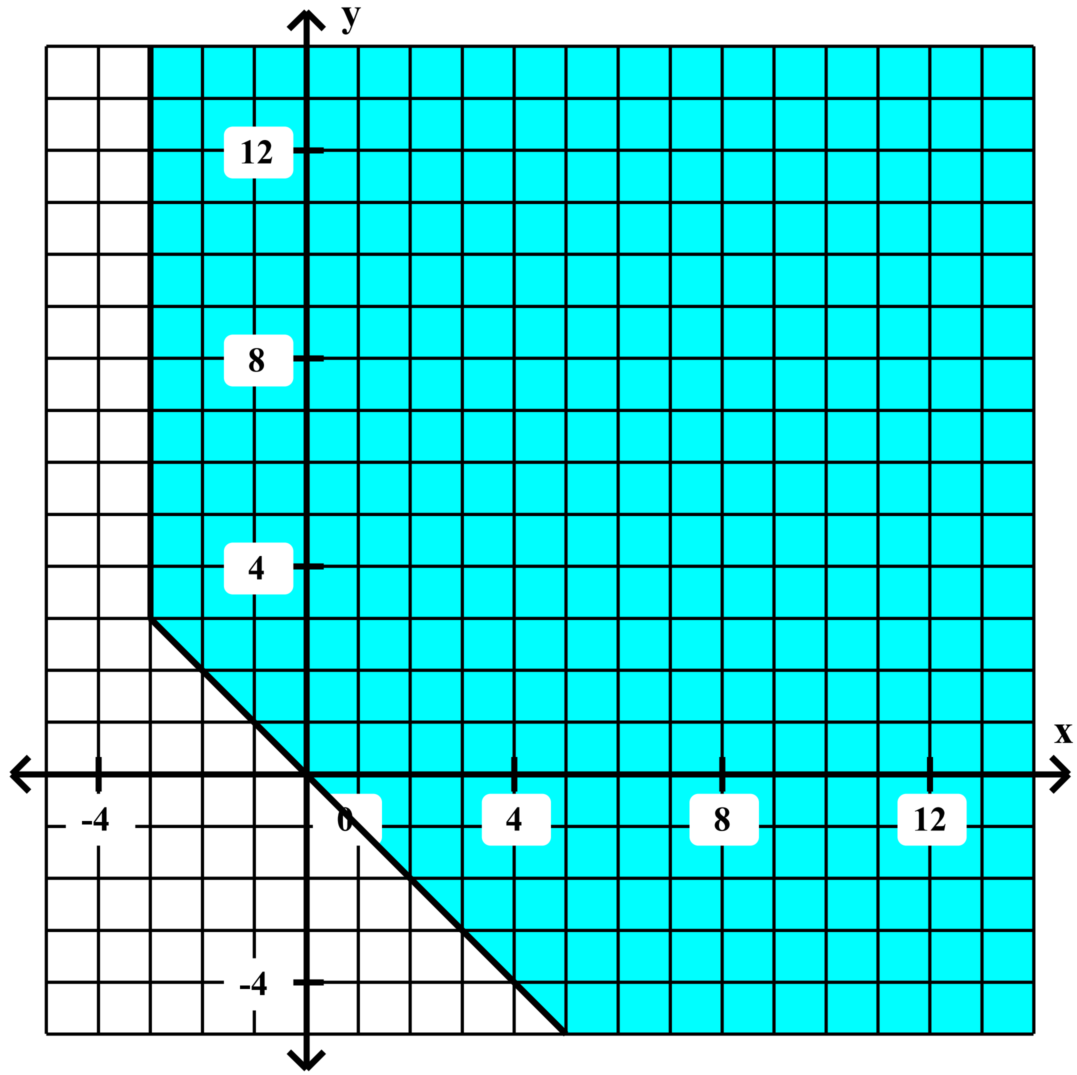

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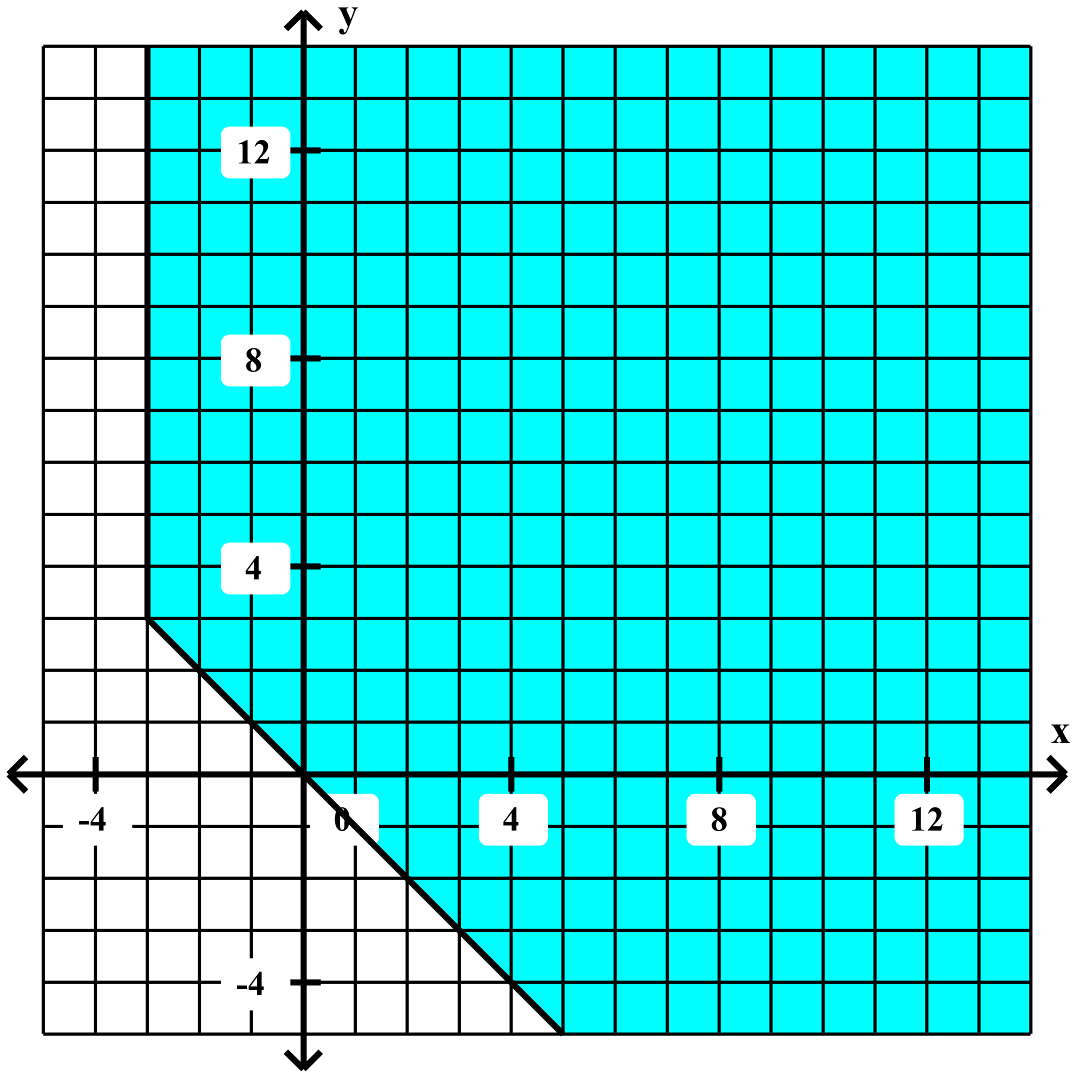

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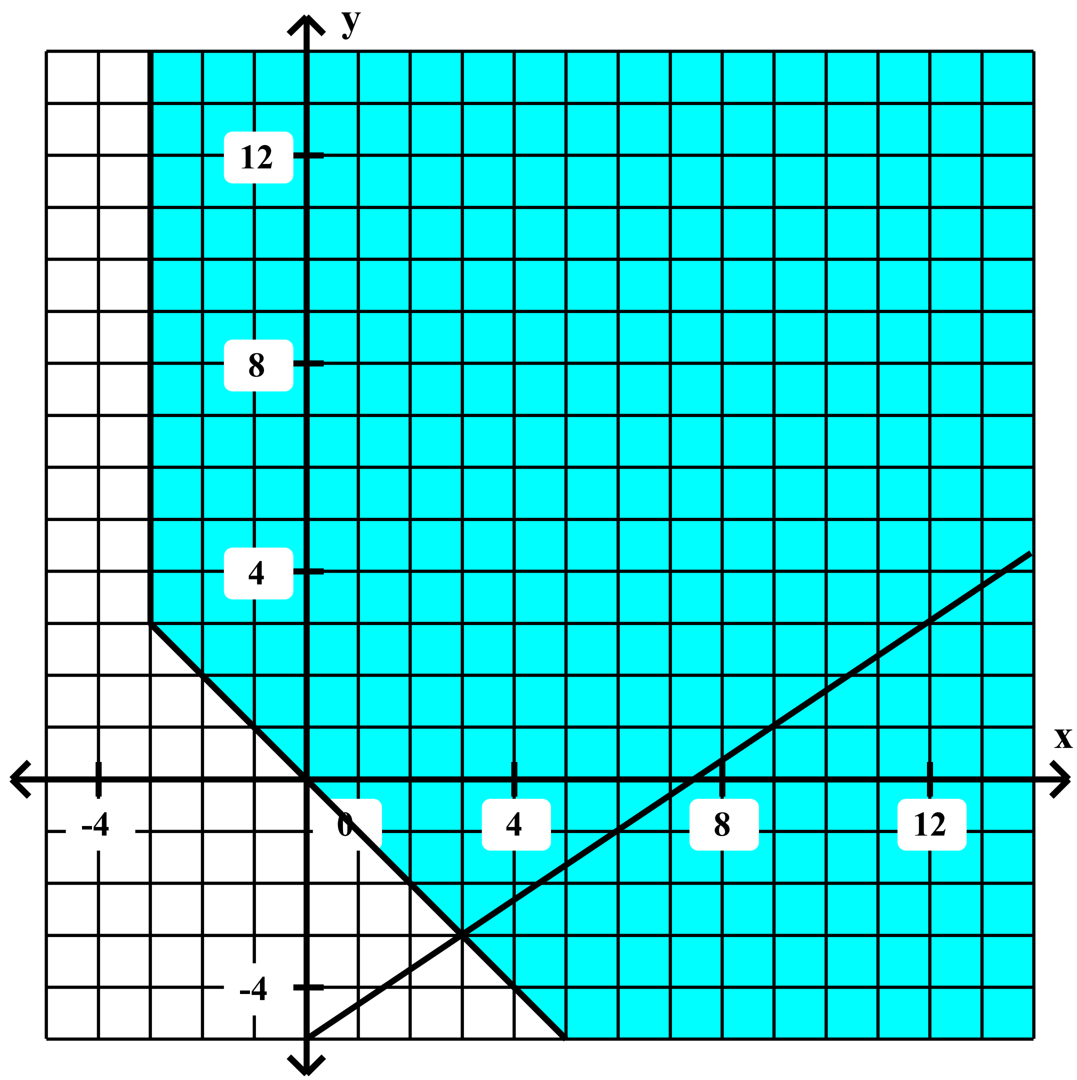

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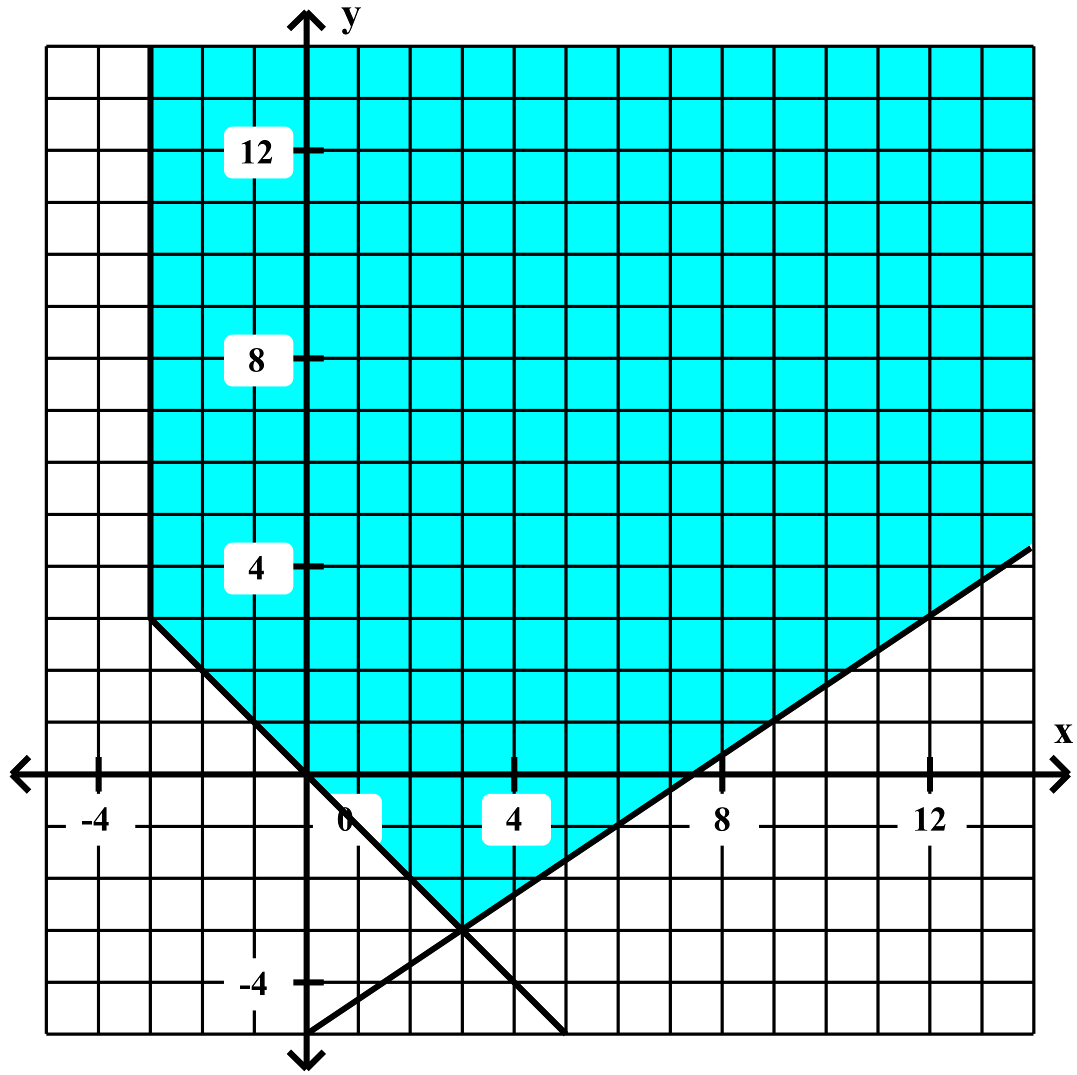

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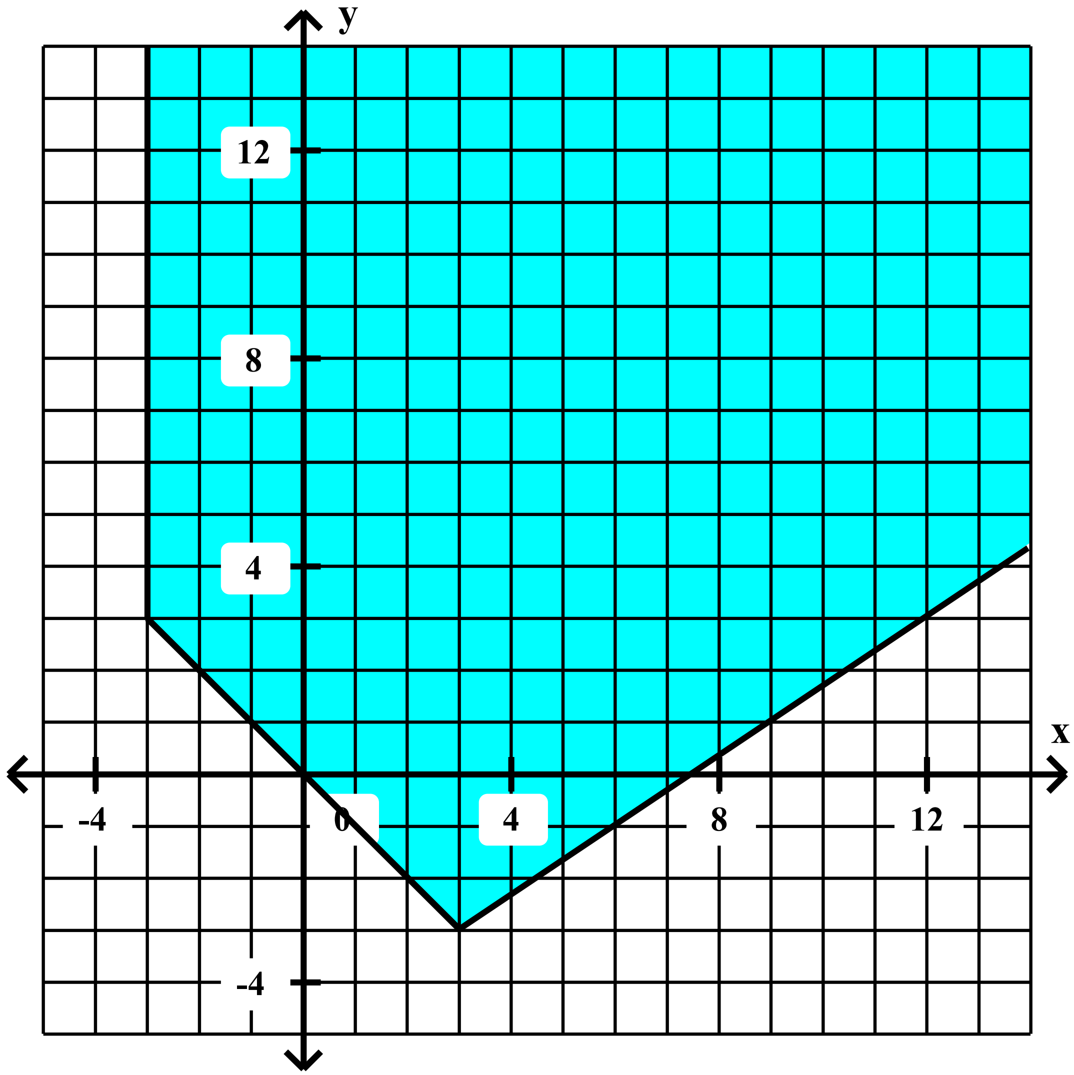

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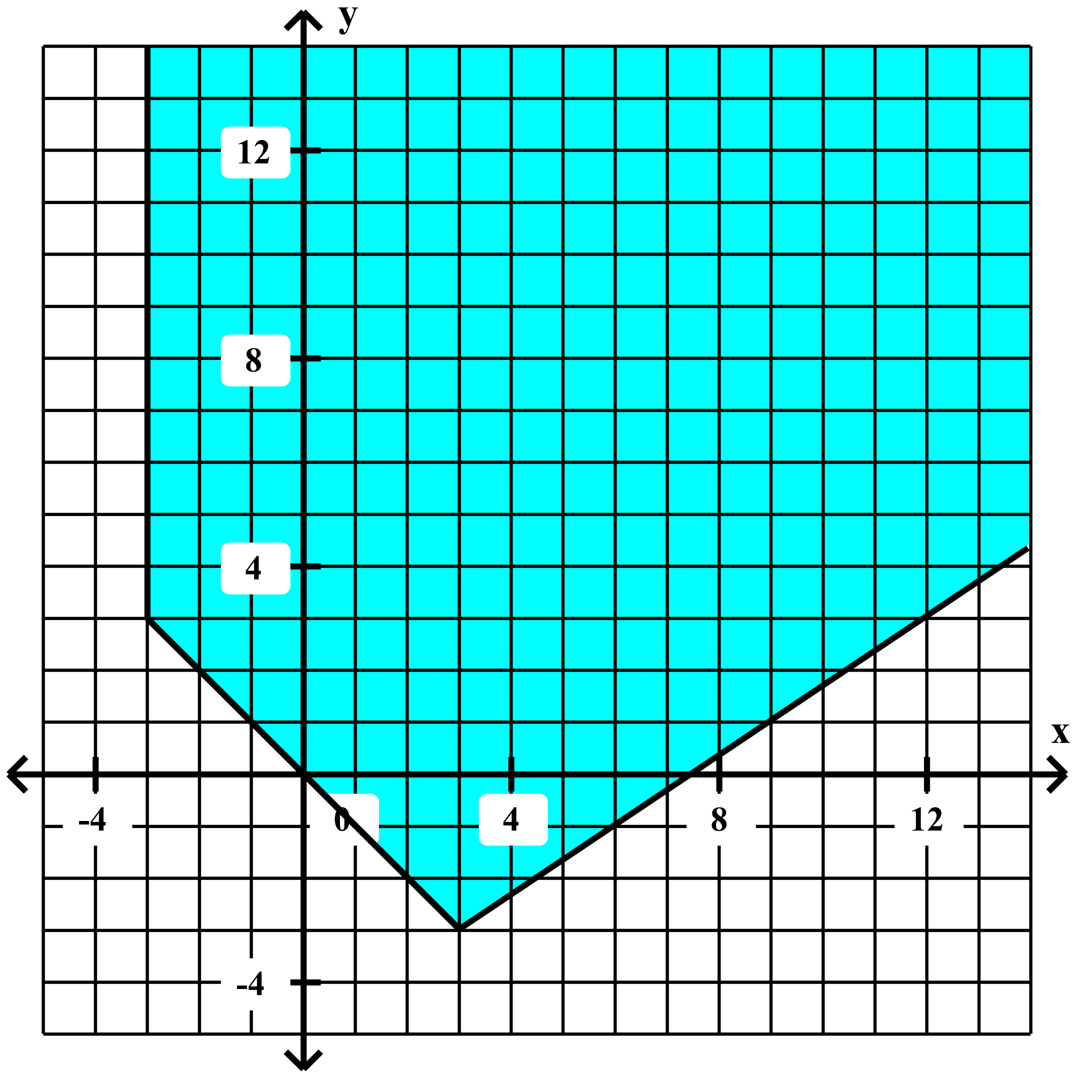

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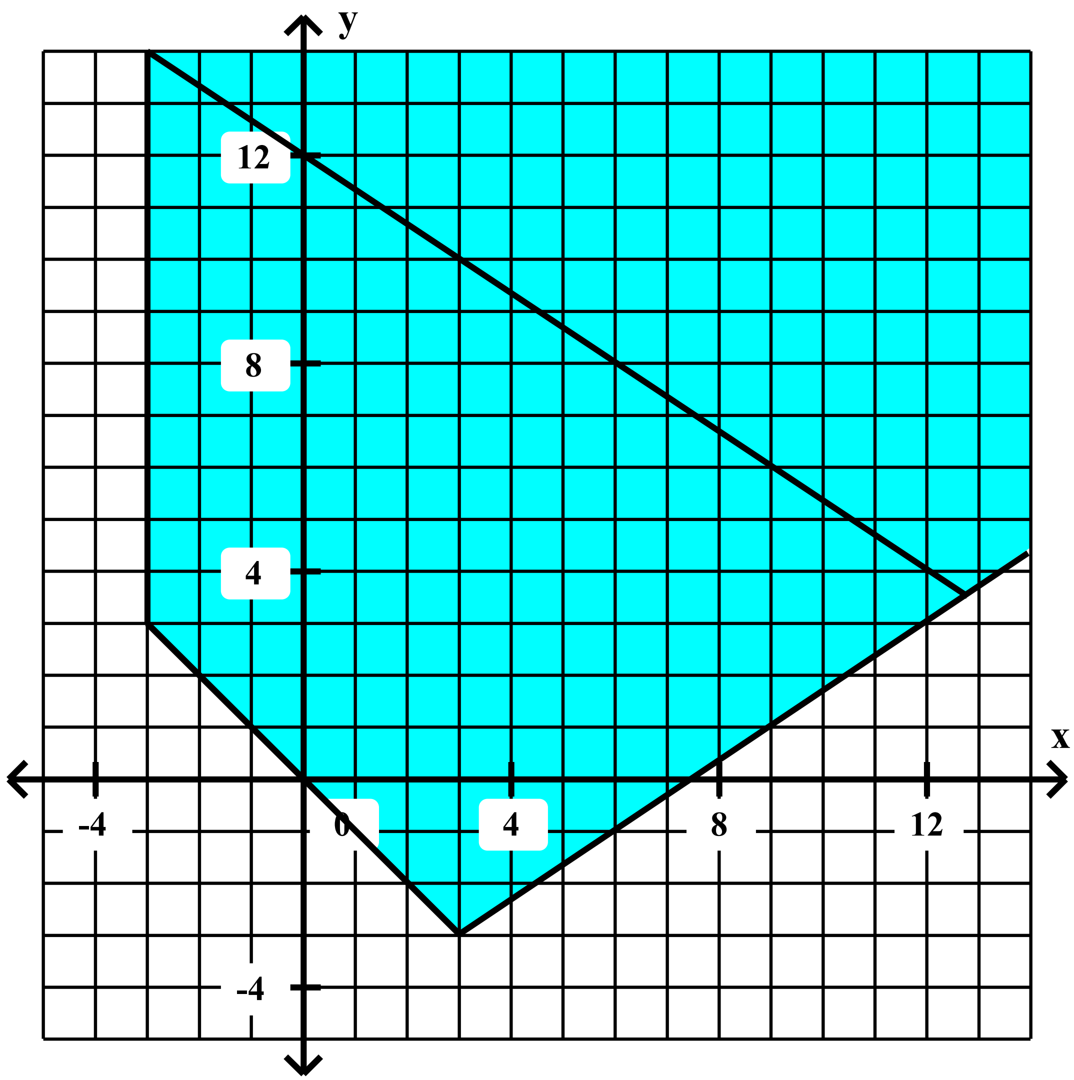

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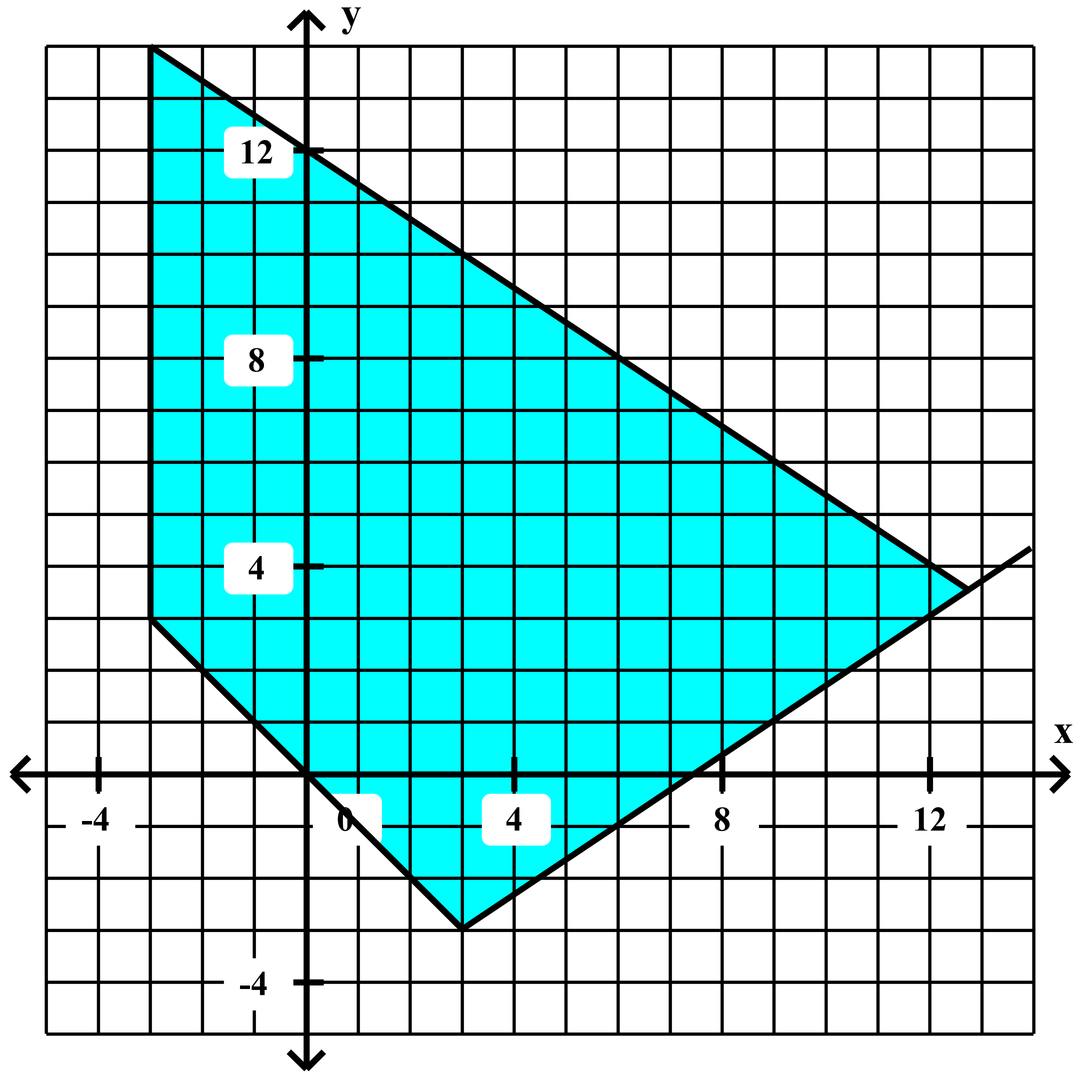

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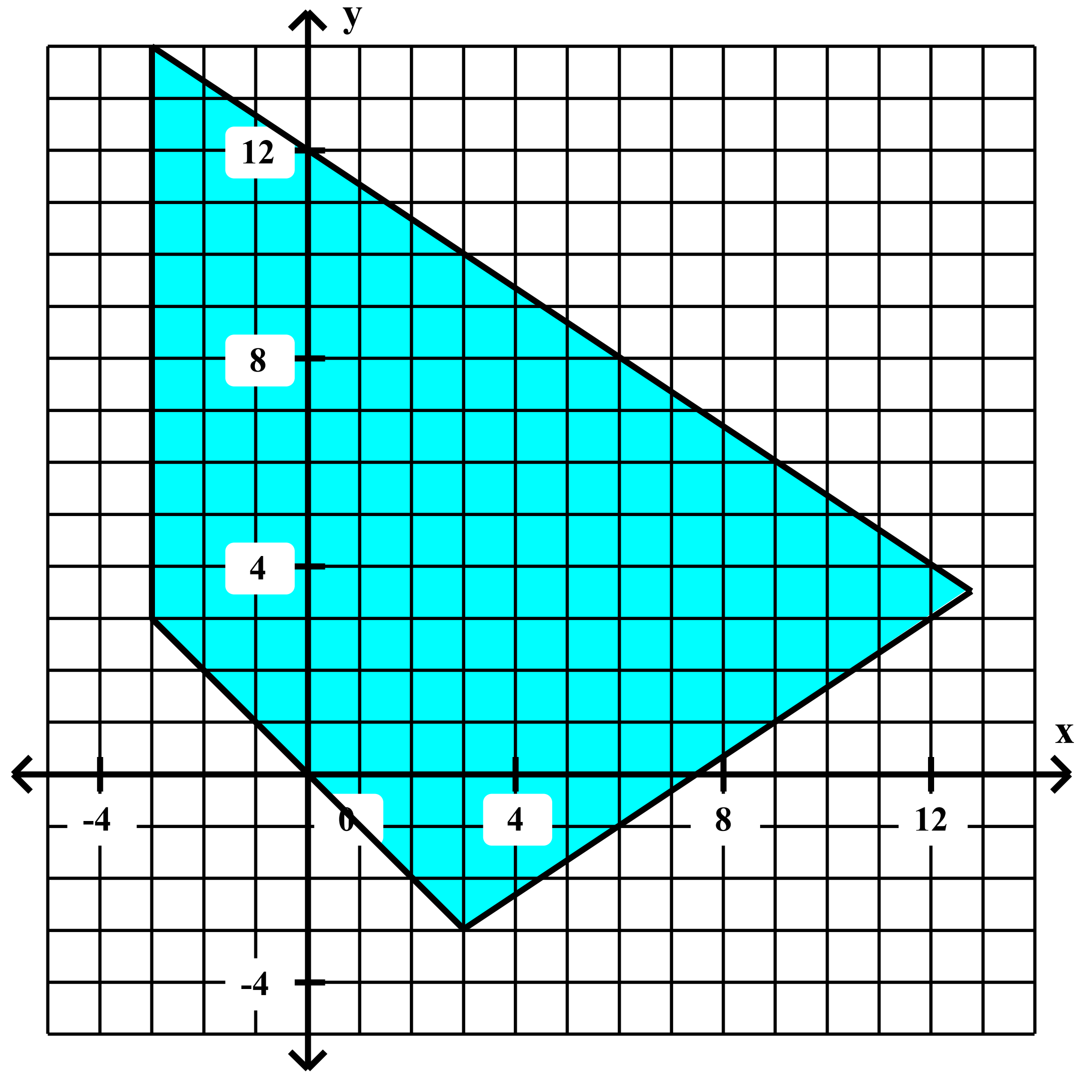

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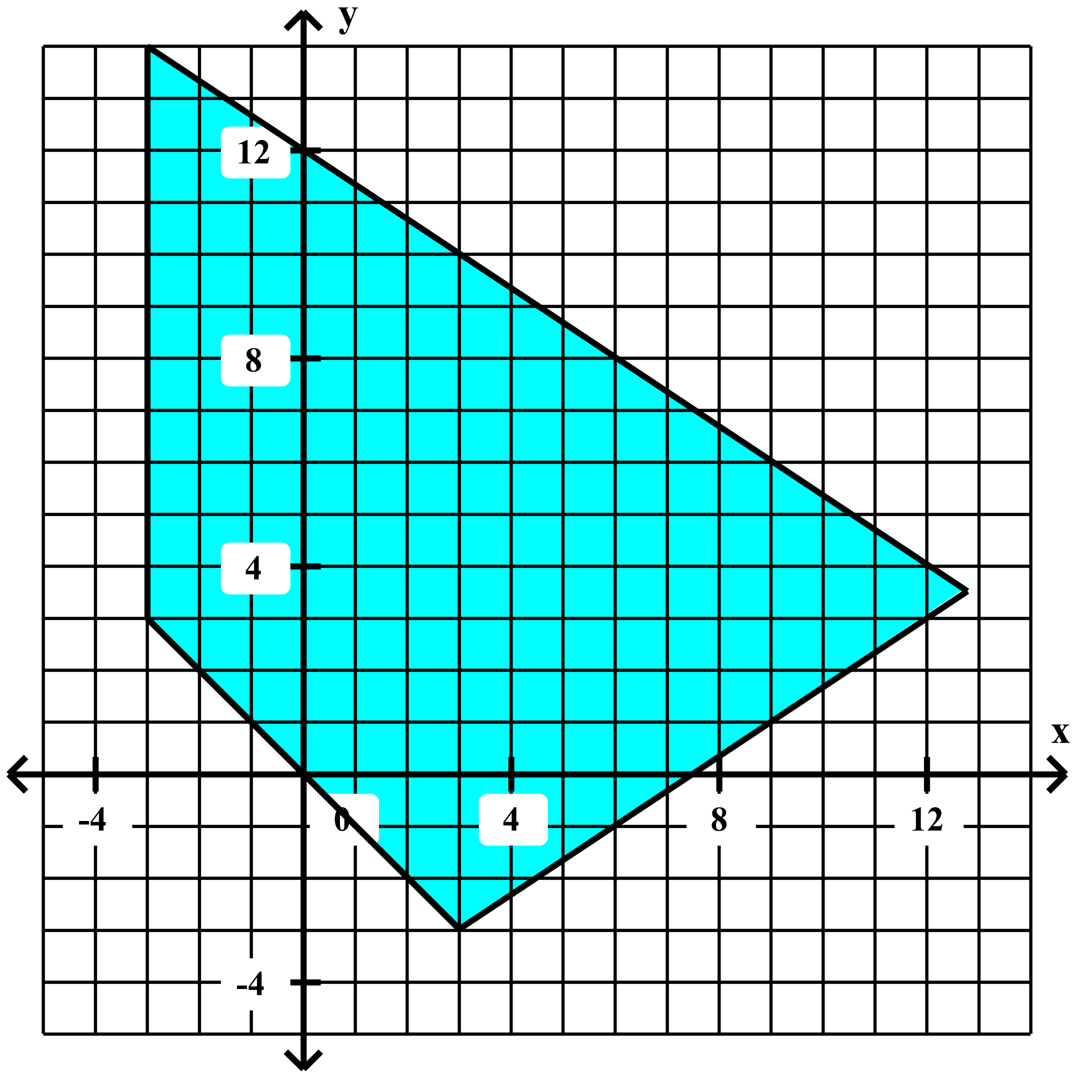

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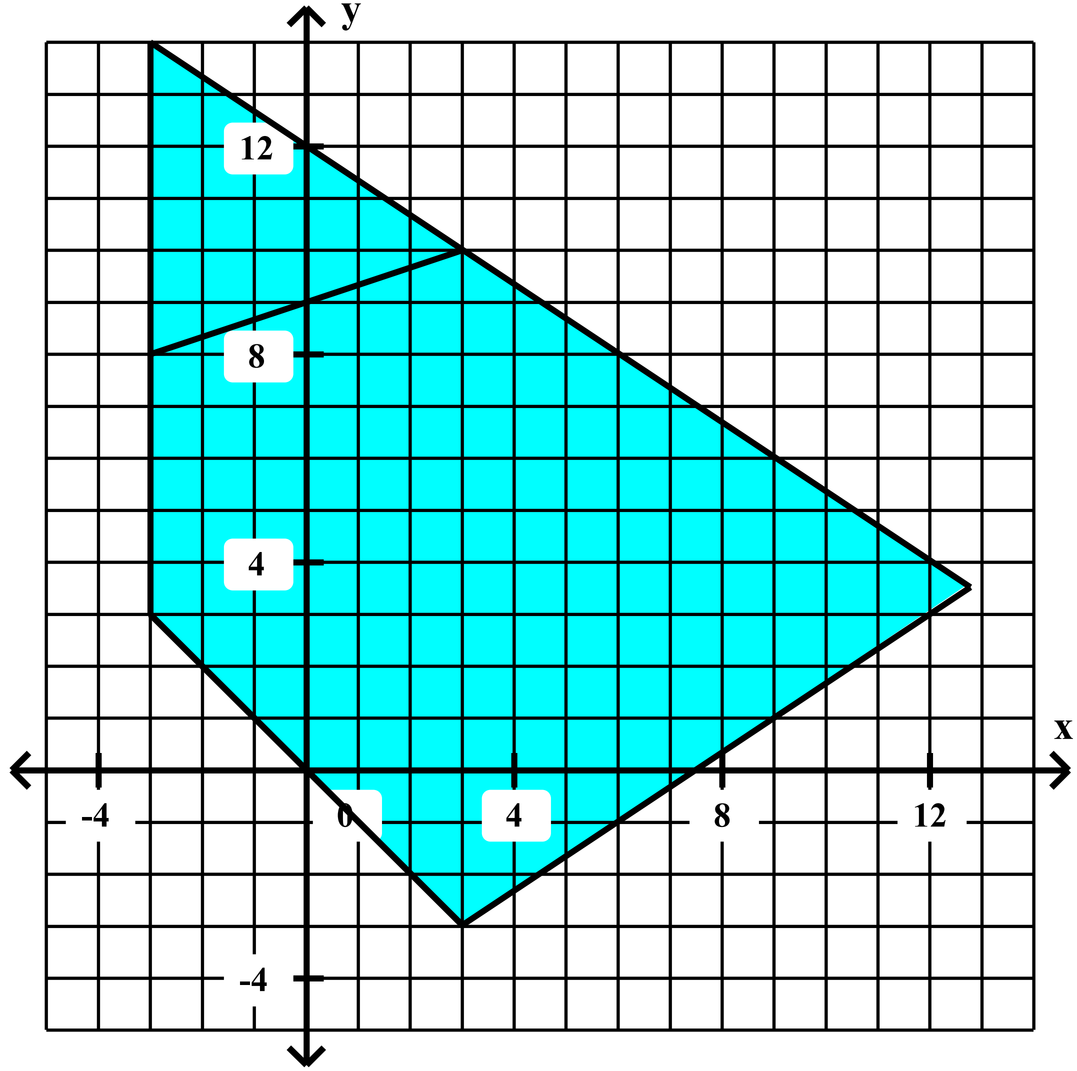

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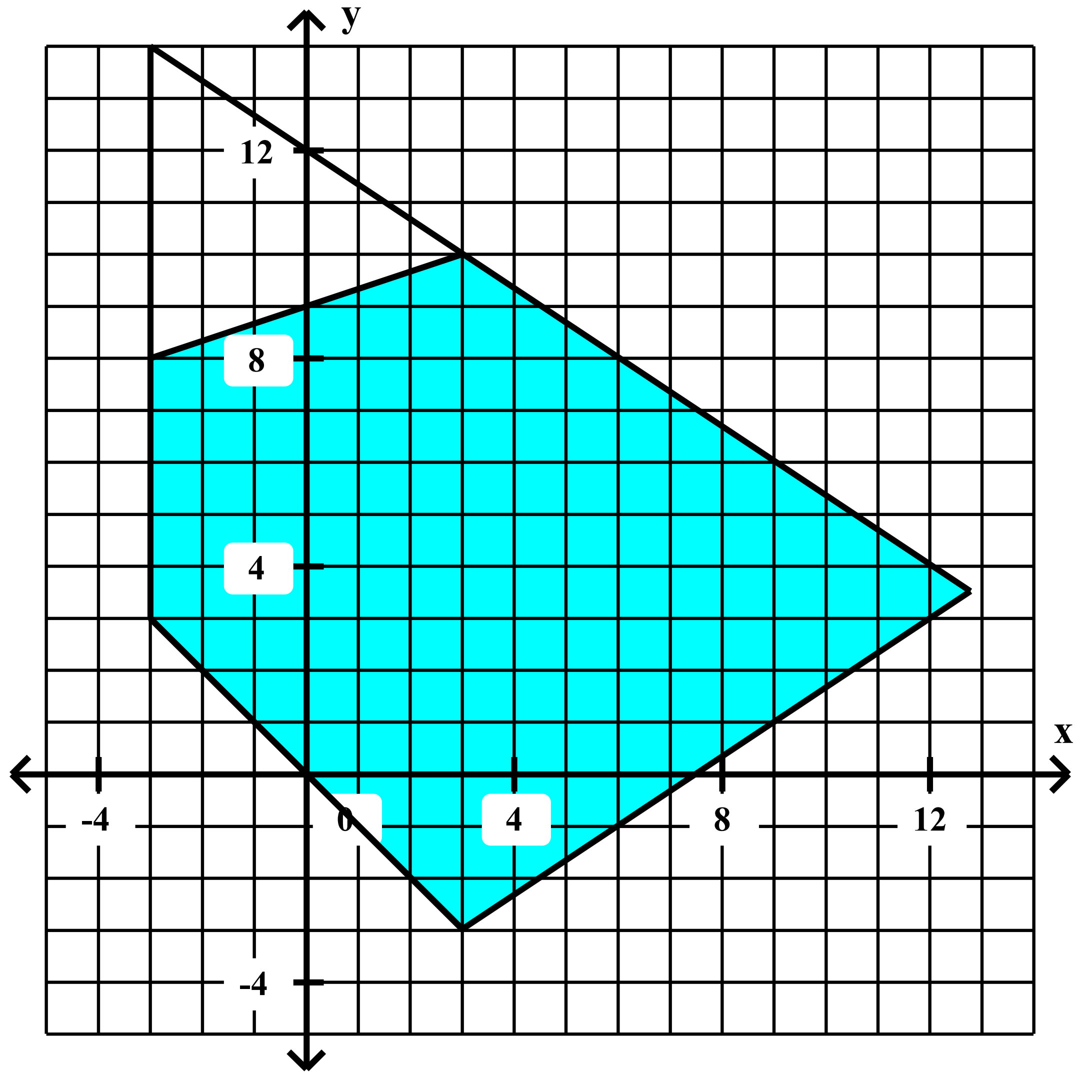

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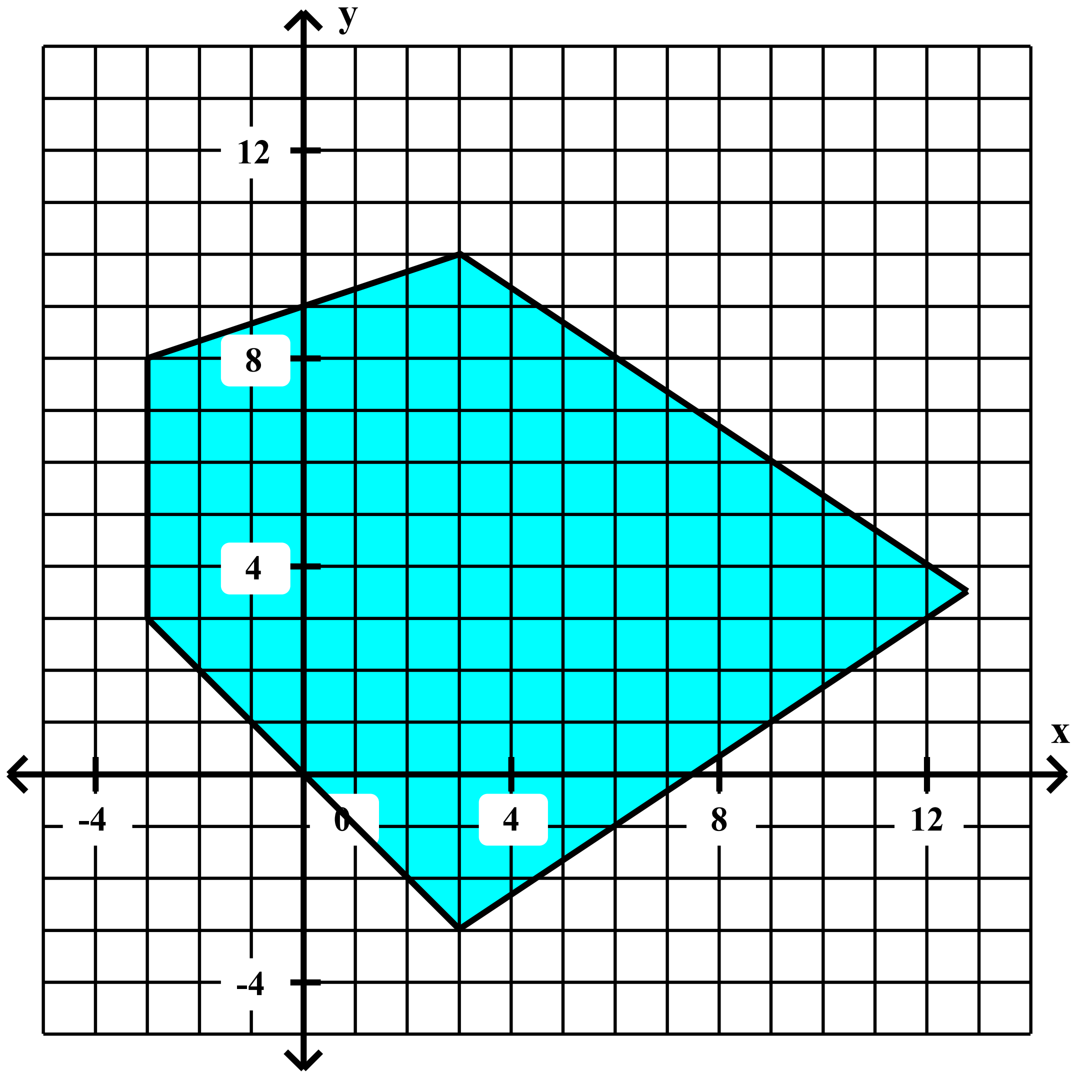

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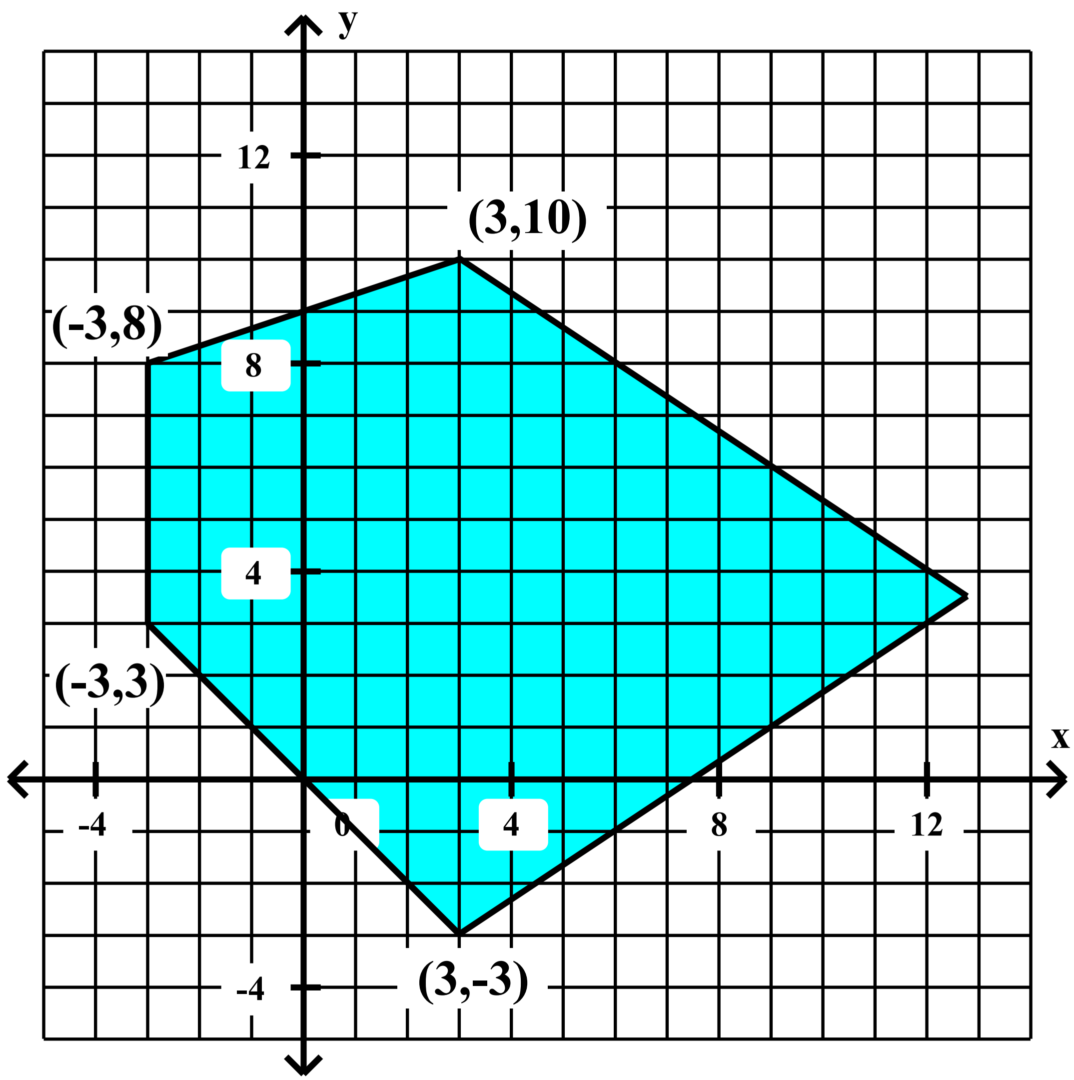

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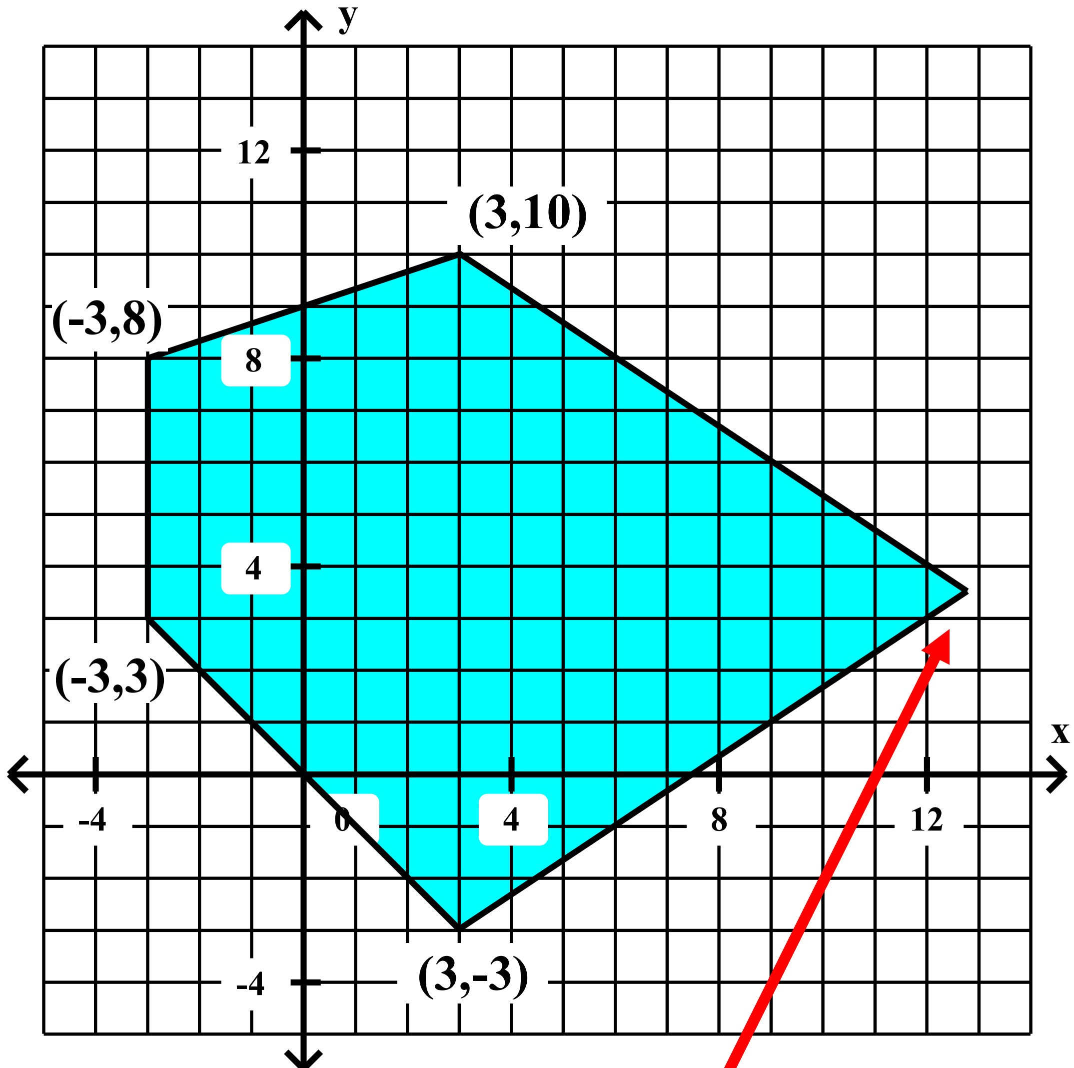

We need to find the coordinates of this vertex.

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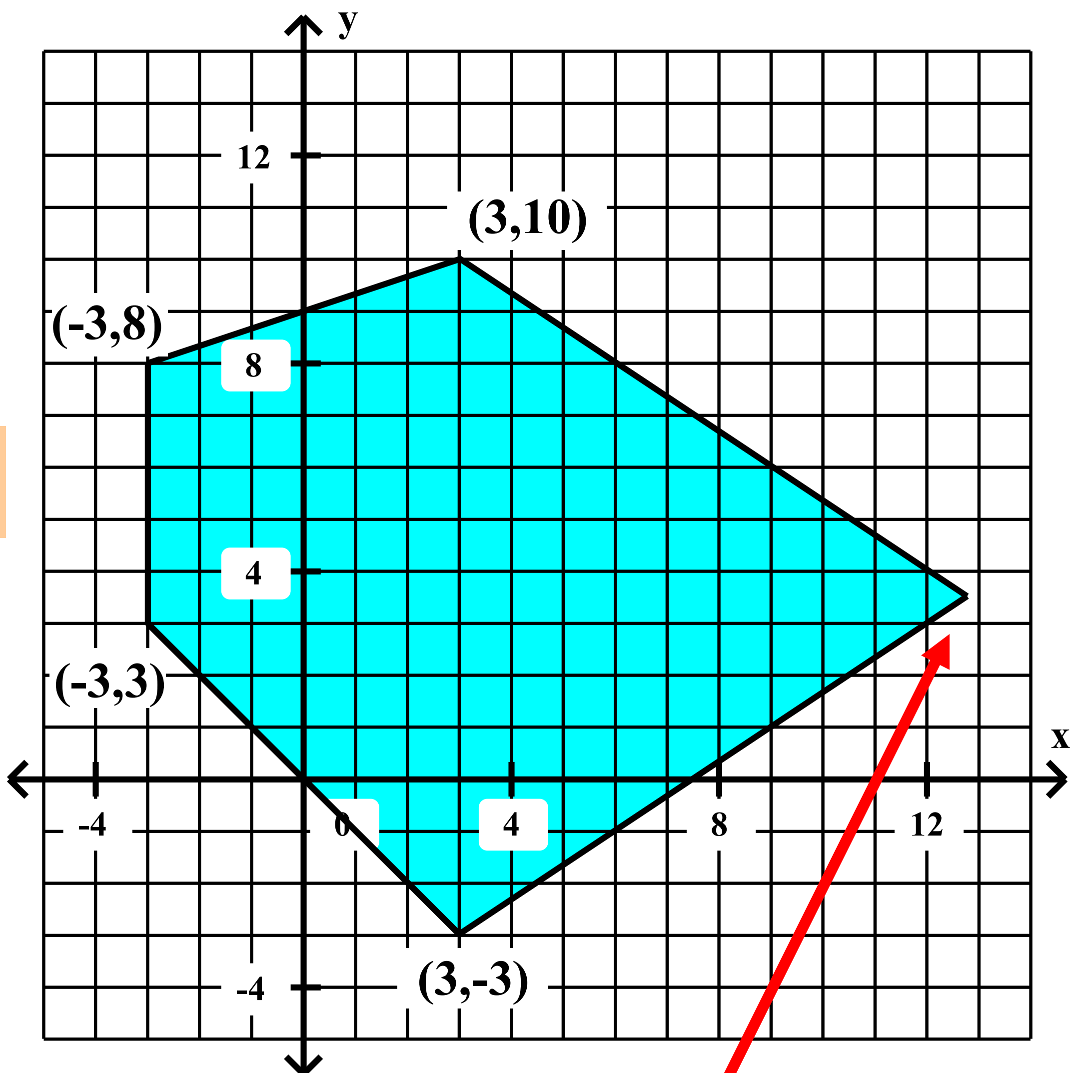

We need to find the coordinates of this vertex.
It is the intersection of these two lines.

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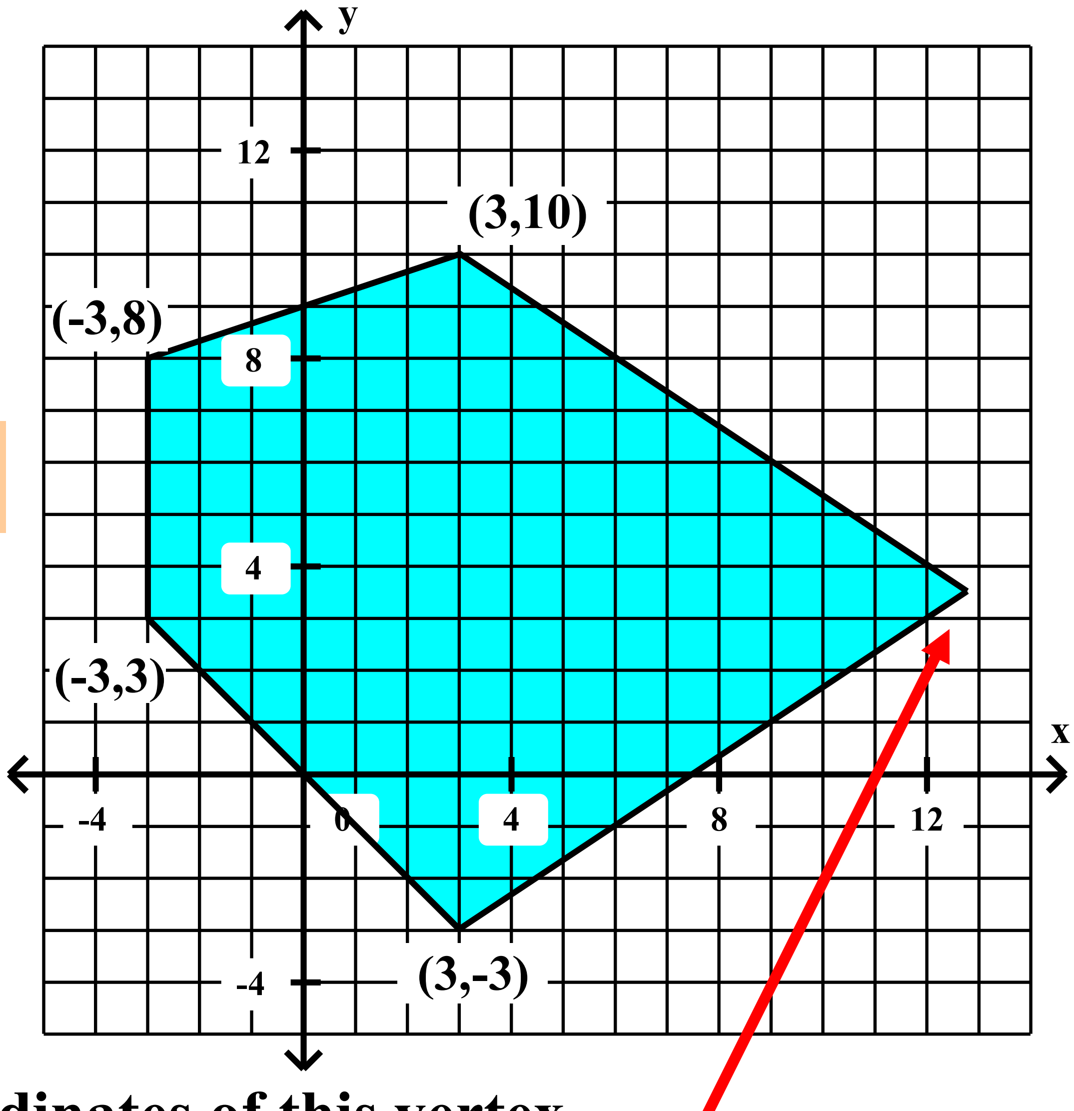
$$\begin{array}{r} 2x - 3y = 15 \\ 2x + 3y = 36 \\ \hline \end{array}$$



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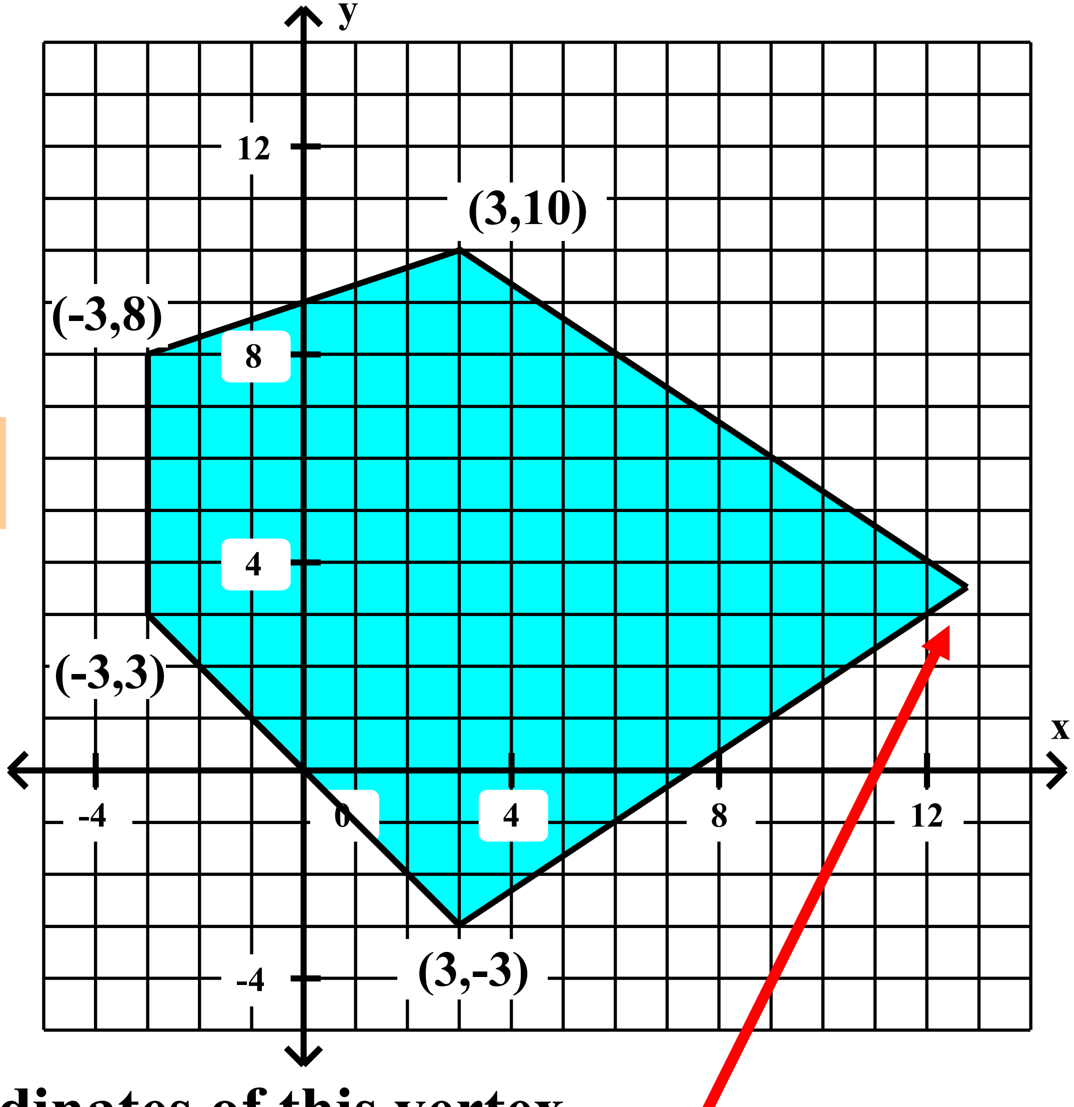
$$\begin{array}{r} 2x - 3y = 15 \\ 2x + 3y = 36 \\ \hline 4x = 51 \end{array}$$



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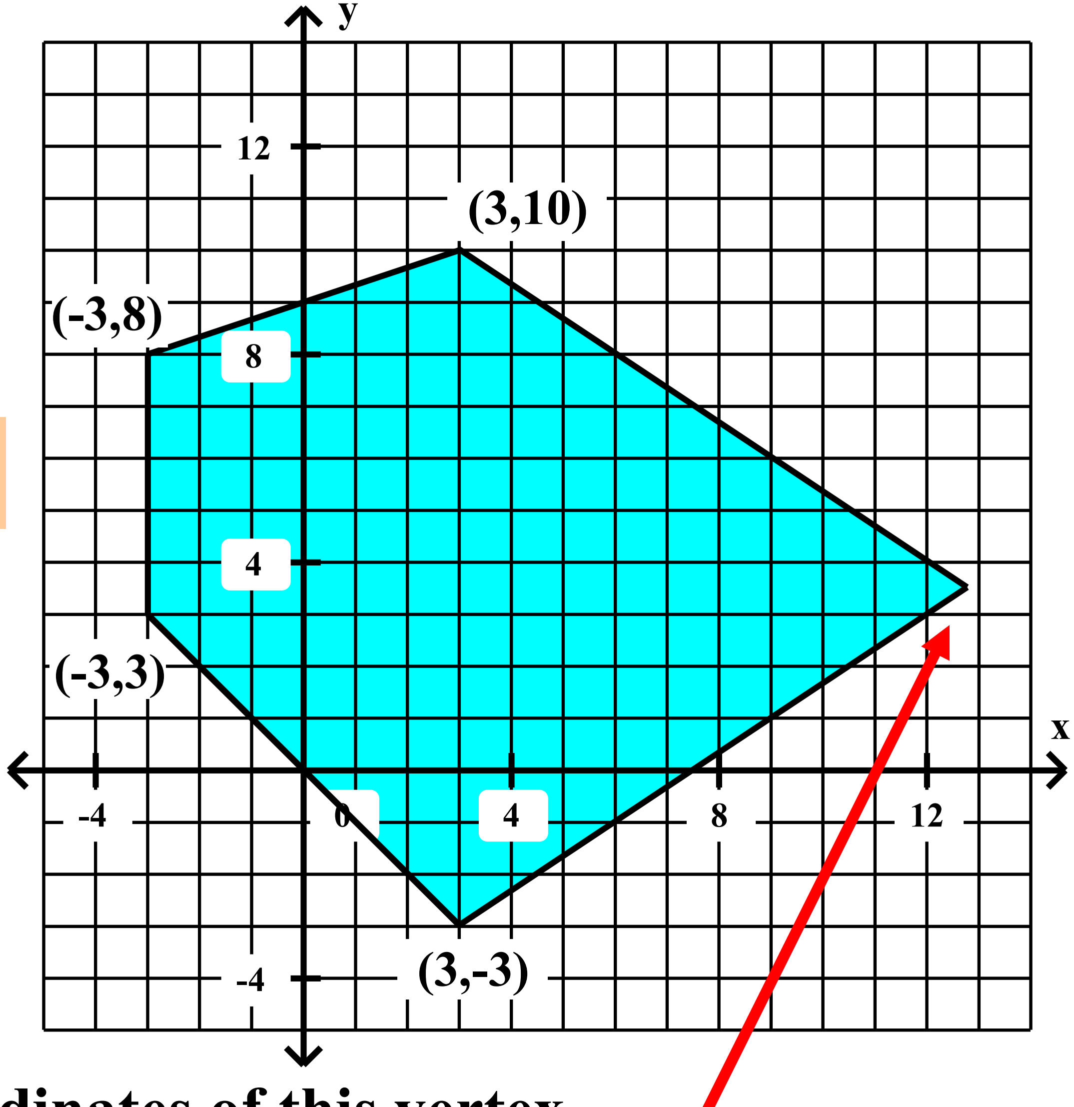
$$\begin{array}{r} 2x - 3y = 15 \\ 2x + 3y = 36 \\ \hline 4x = 51 \end{array}$$

$x = 12.75$



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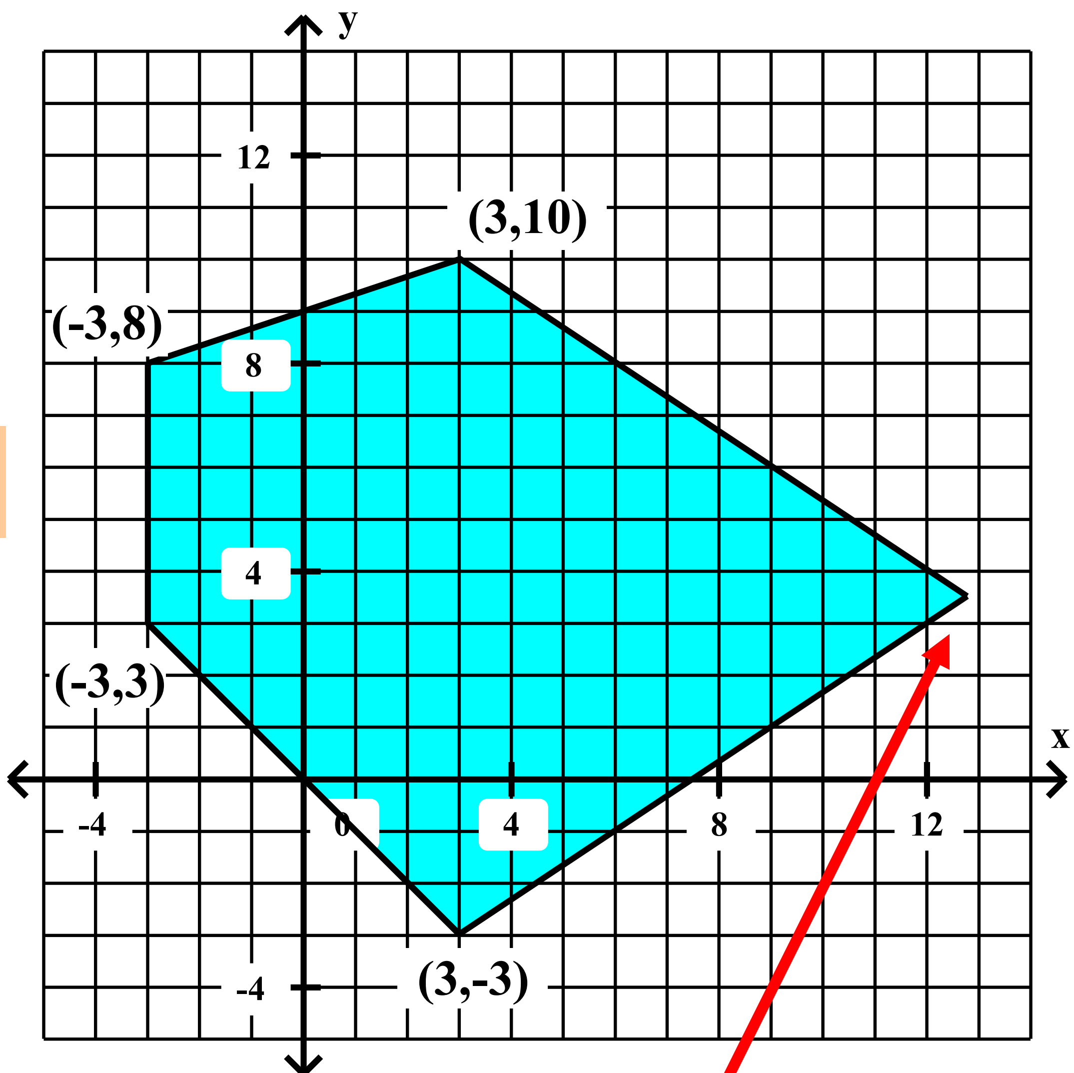
$$\begin{aligned} 2x - 3y &= 15 \\ 2x + 3y &= 36 \\ \hline 4x &= 51 \\ x &= 12.75 \end{aligned} \qquad \begin{aligned} -2x + 3y &= -15 \\ 2x + 3y &= 36 \\ \hline \end{aligned}$$



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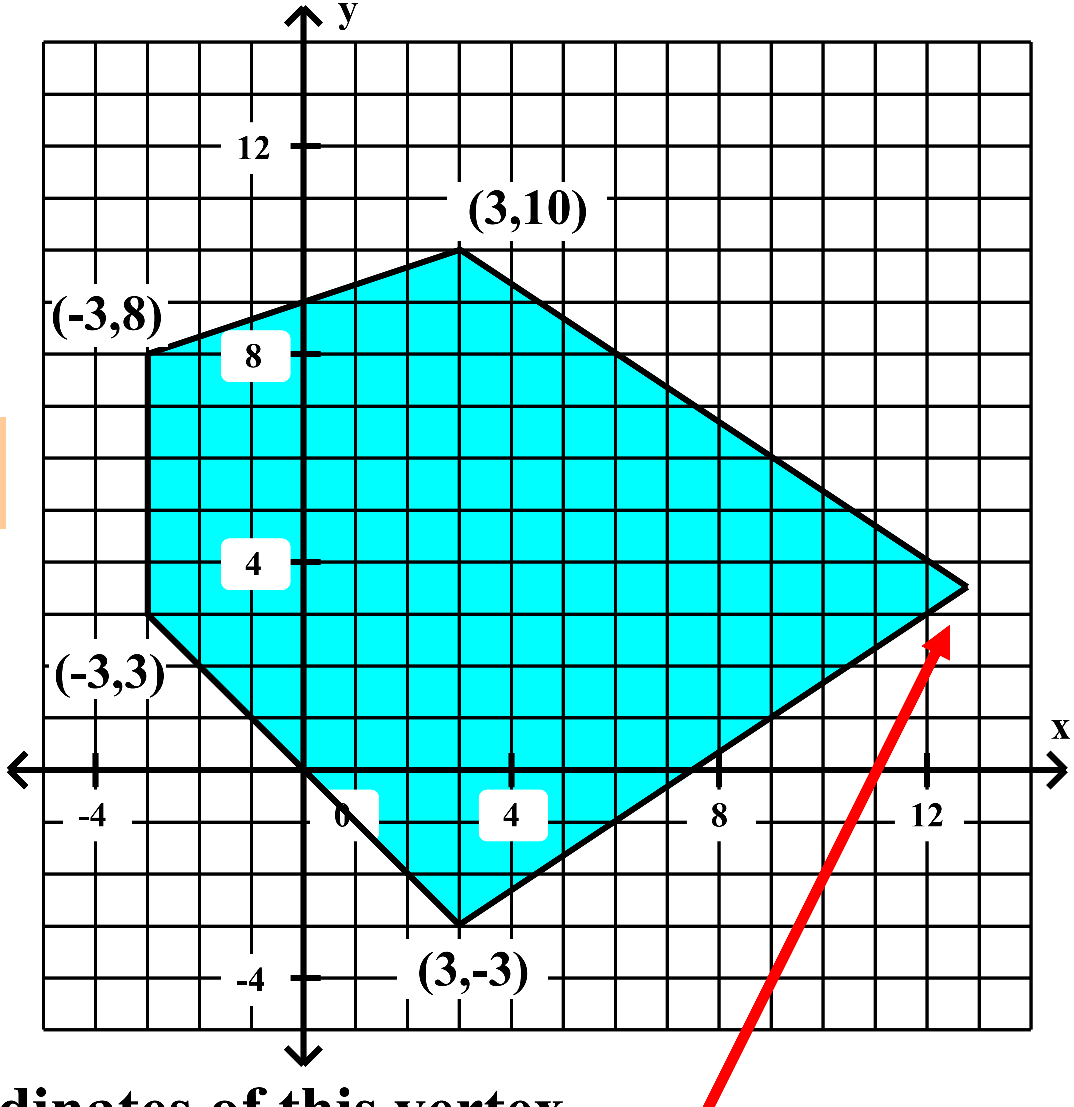
$x = 12.75$



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Algebra II Class Worksheet #4 Unit 4

Questions 5-8

$x + 3 \geq 0 \Rightarrow x \geq -3$

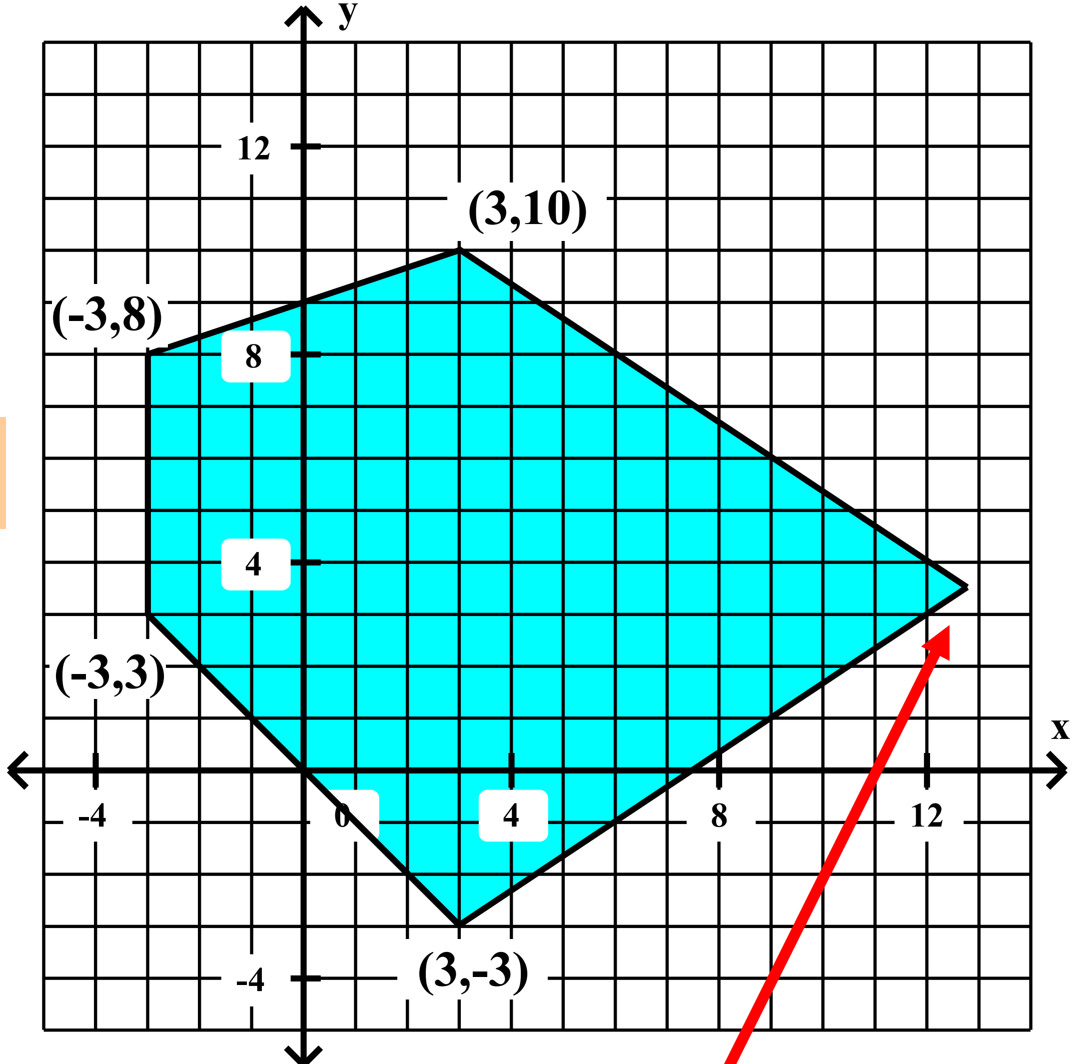
$x + y \geq 0 \Rightarrow y \geq -x$

$2x - 3y \leq 15 \Rightarrow y \geq \frac{2}{3}x - 5$

$2x + 3y \leq 36 \Rightarrow y \leq \frac{-2}{3}x + 12$

$x - 3y \geq -27 \Rightarrow y \leq \frac{1}{3}x + 9$

$$\begin{aligned} 2x - 3y &= 15 \\ 2x + 3y &= 36 \\ \hline 4x &= 51 \\ x &= 12.75 \end{aligned} \qquad \begin{aligned} -2x + 3y &= -15 \\ 2x + 3y &= 36 \\ \hline 6y &= 21 \\ y &= 3.5 \end{aligned}$$



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Algebra II Class Worksheet #4 Unit 4

Questions 5-8

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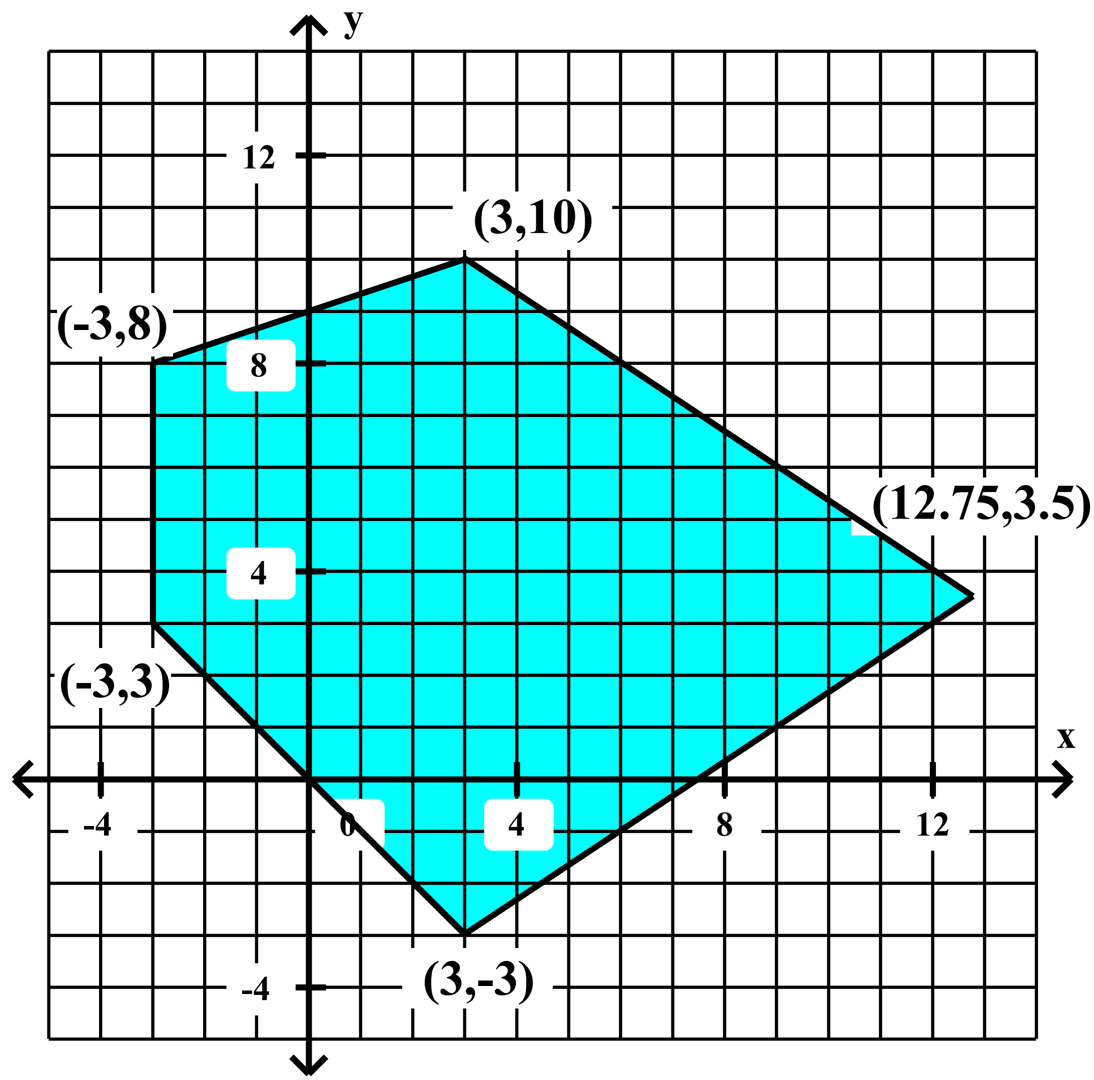
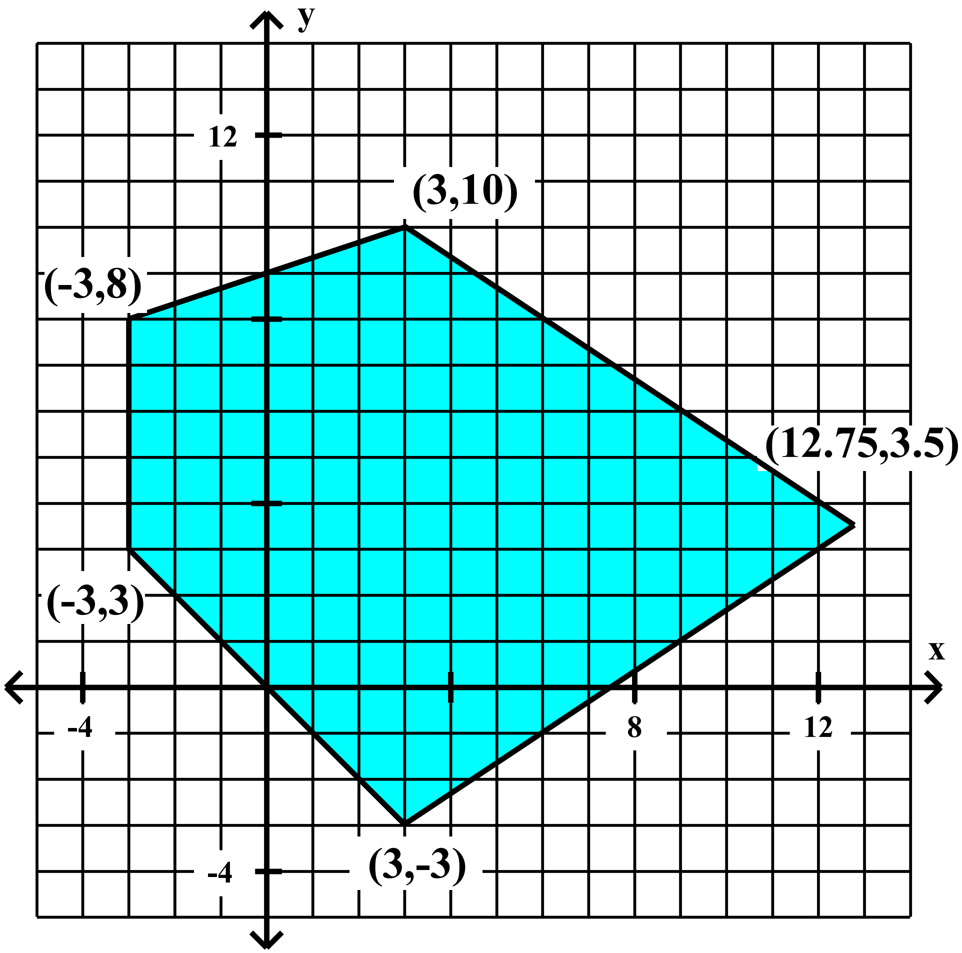
$$\begin{array}{r} 2x - 3y = 15 \\ 2x + 3y = 36 \\ \hline 4x = 51 \\ \mathbf{x = 12.75} \end{array} \qquad \begin{array}{r} -2x + 3y = -15 \\ 2x + 3y = 36 \\ \hline 6y = 21 \\ \mathbf{y = 3.5} \end{array}$$



Algebra II Class Worksheet #4 Unit 4



5. $F = x + 2y$

F_{max} = ______ at ________

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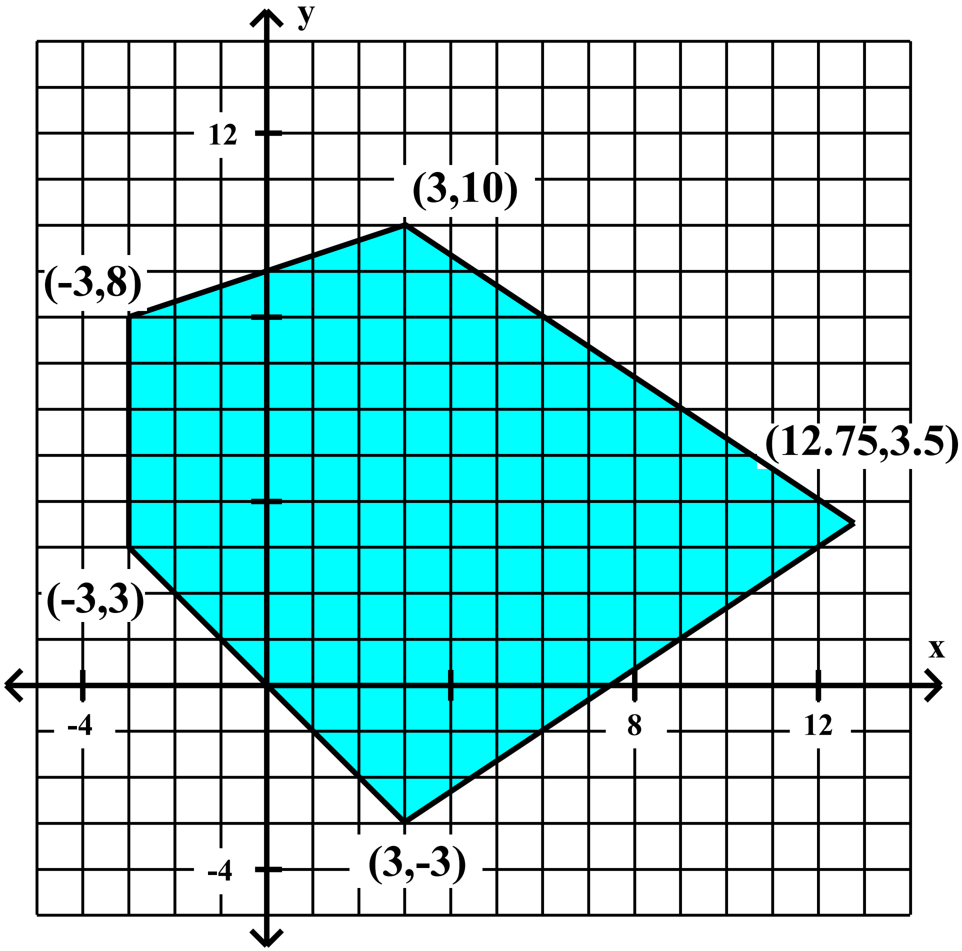
Algebra II Class Worksheet #4 Unit 4



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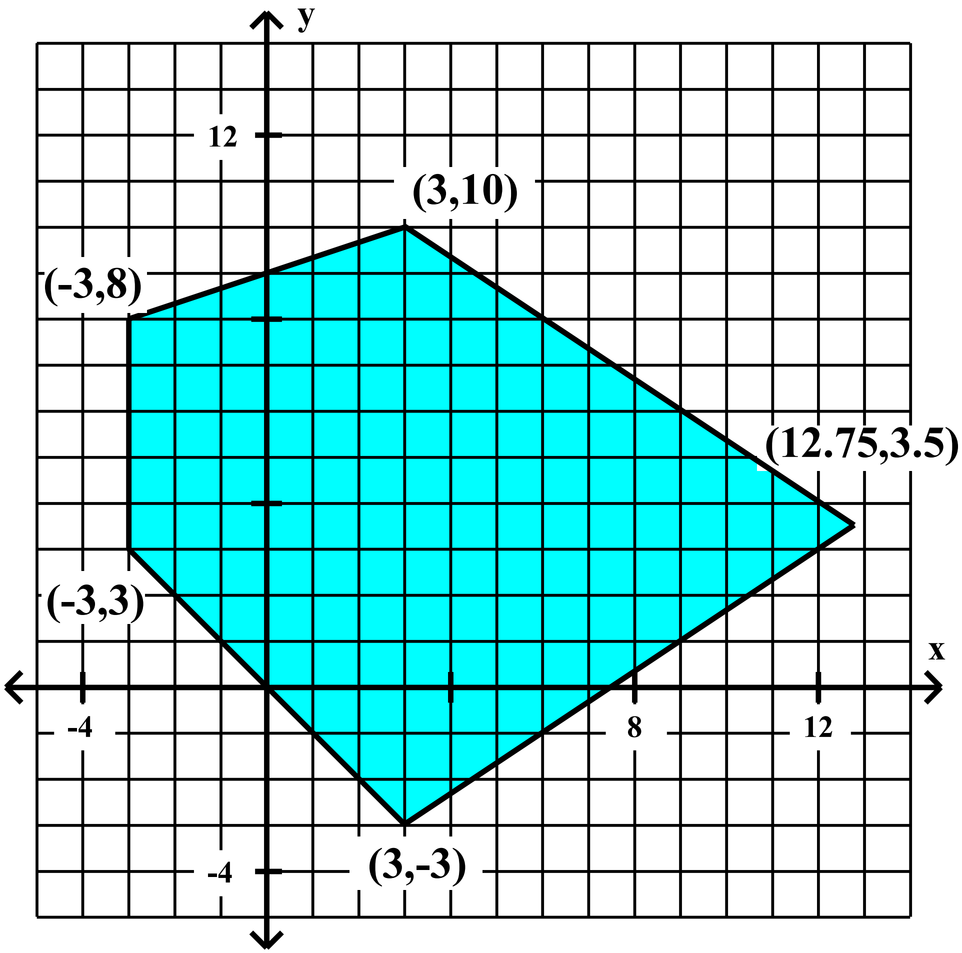

The **maximum** and the **minimum** values of F will occur at a vertex of the region.

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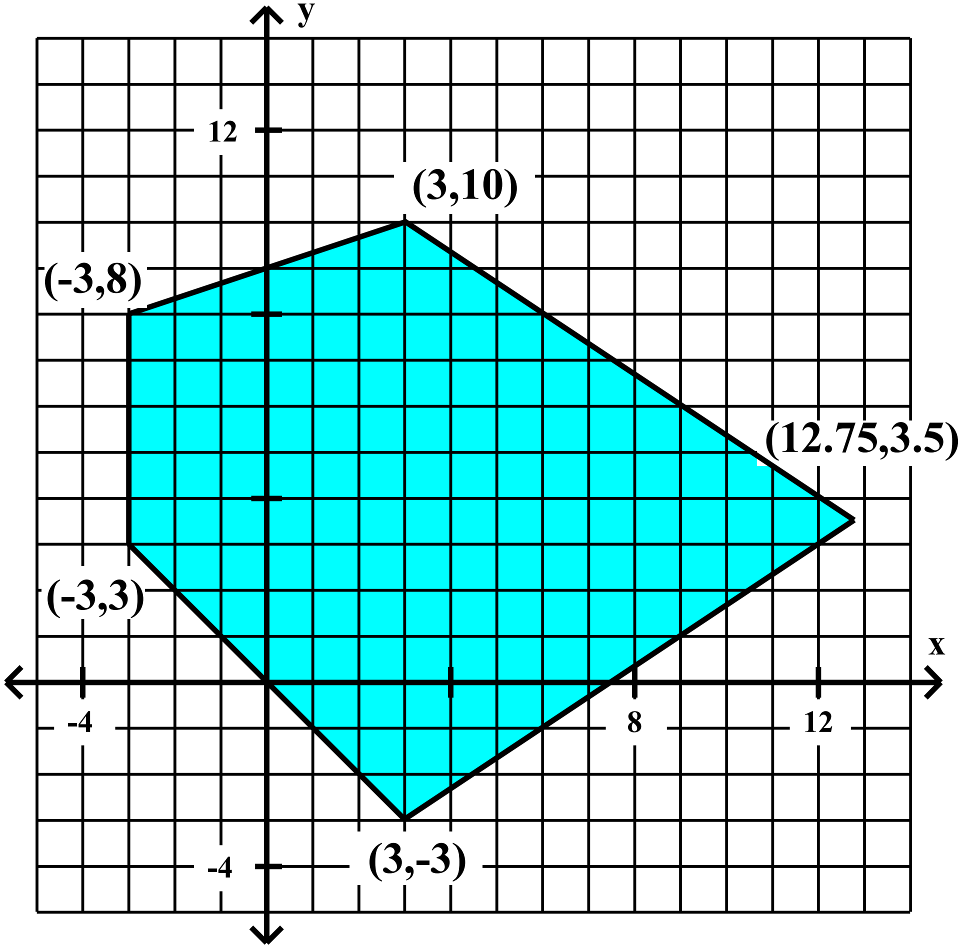
Algebra II Class Worksheet #4 Unit 4



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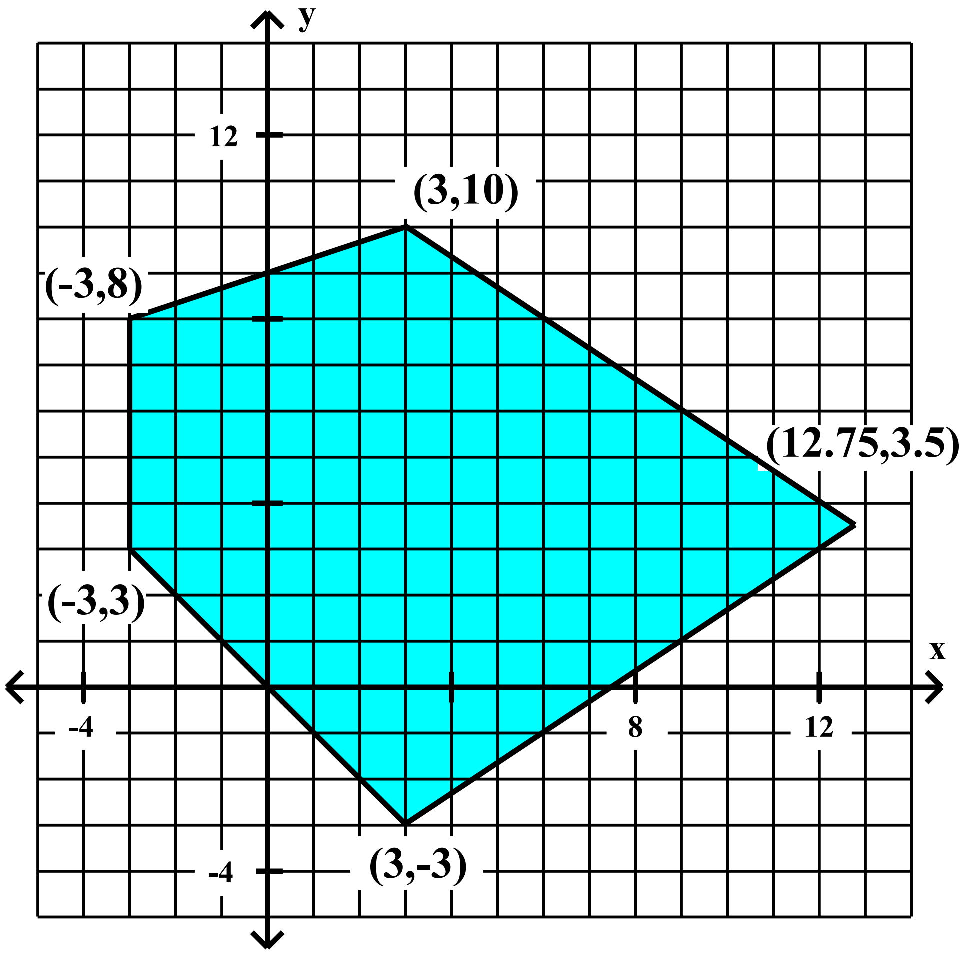
At (3,10)

Algebra II Class Worksheet #4 Unit 4



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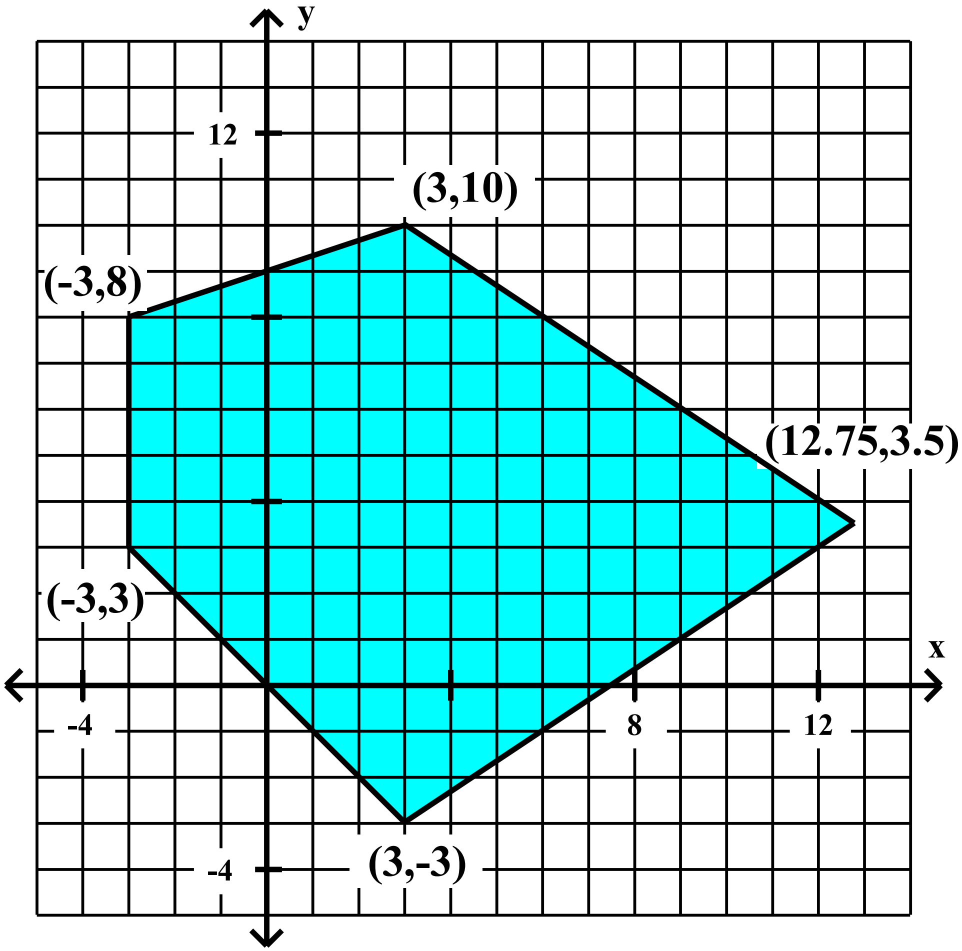
At (3,10) ⟹ F =

Algebra II Class Worksheet #4 Unit 4



The **maximum** and the **minimum** values of F will occur at a vertex of the region.

5. $F = x + 2y$

F_{max} = ______ at _________

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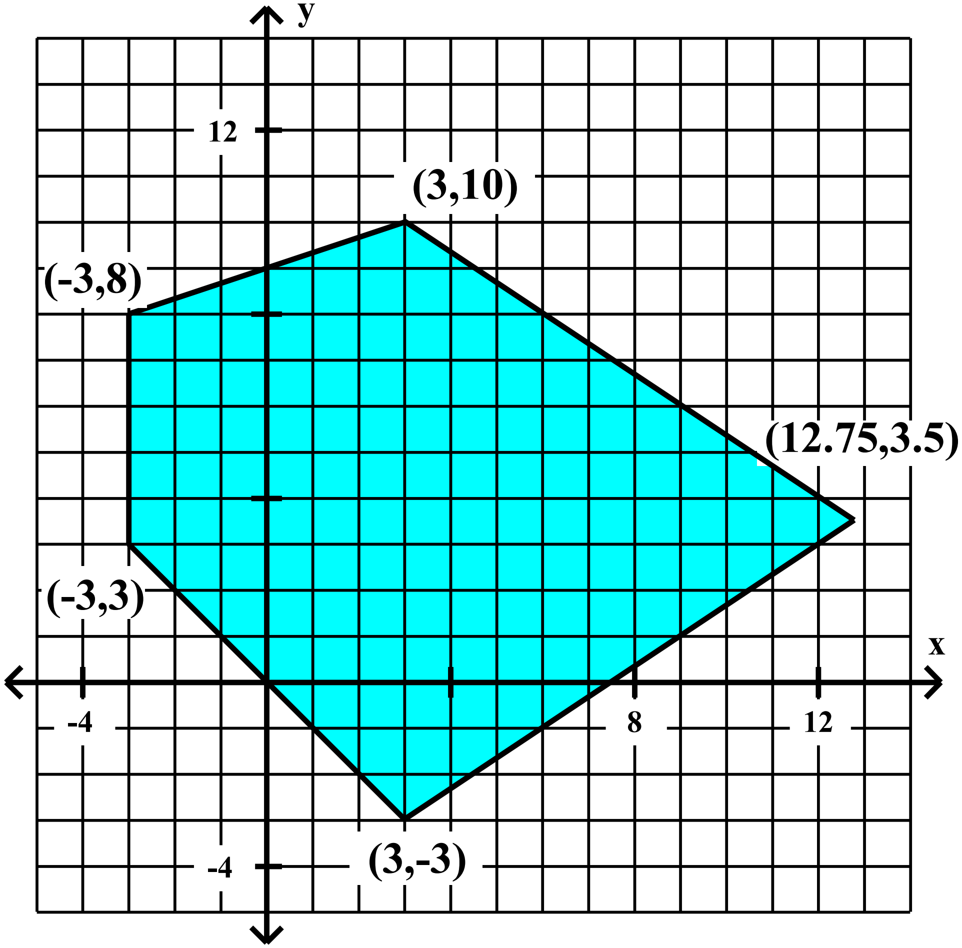
At (3,10) $\Rightarrow$ F = 3

Algebra II   Class Worksheet #4   Unit 4



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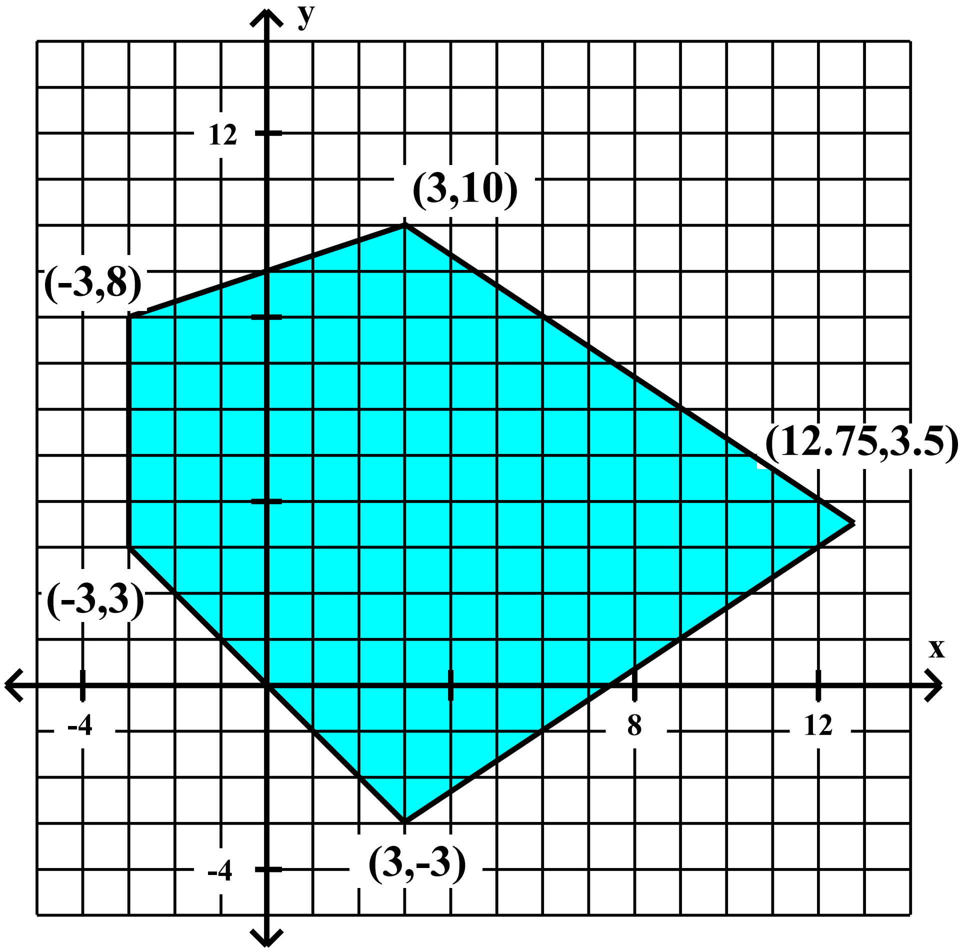
At (3,10) $\Rightarrow$ F = 3 +

Algebra II Class Worksheet #4 Unit 4



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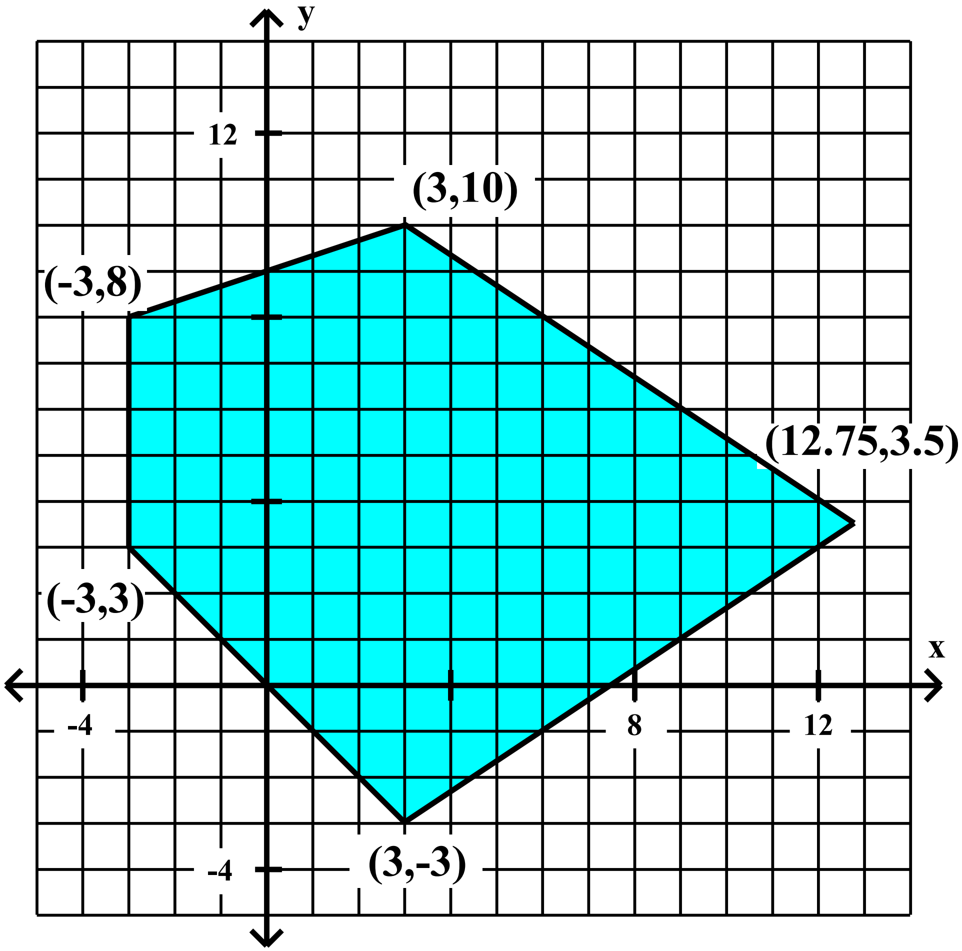
At (3,10) $\Rightarrow$ F = 3 + 20

Algebra II Class Worksheet #4 Unit 4



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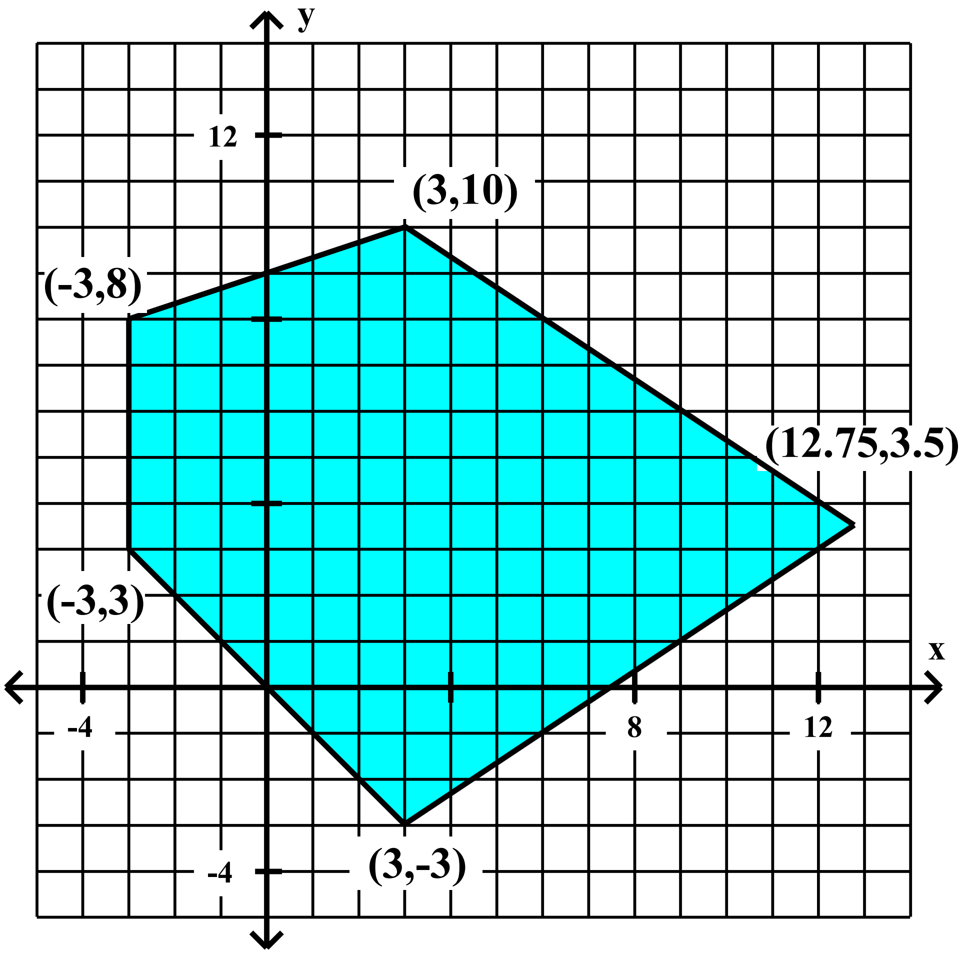
Algebra II Class Worksheet #4 Unit 4



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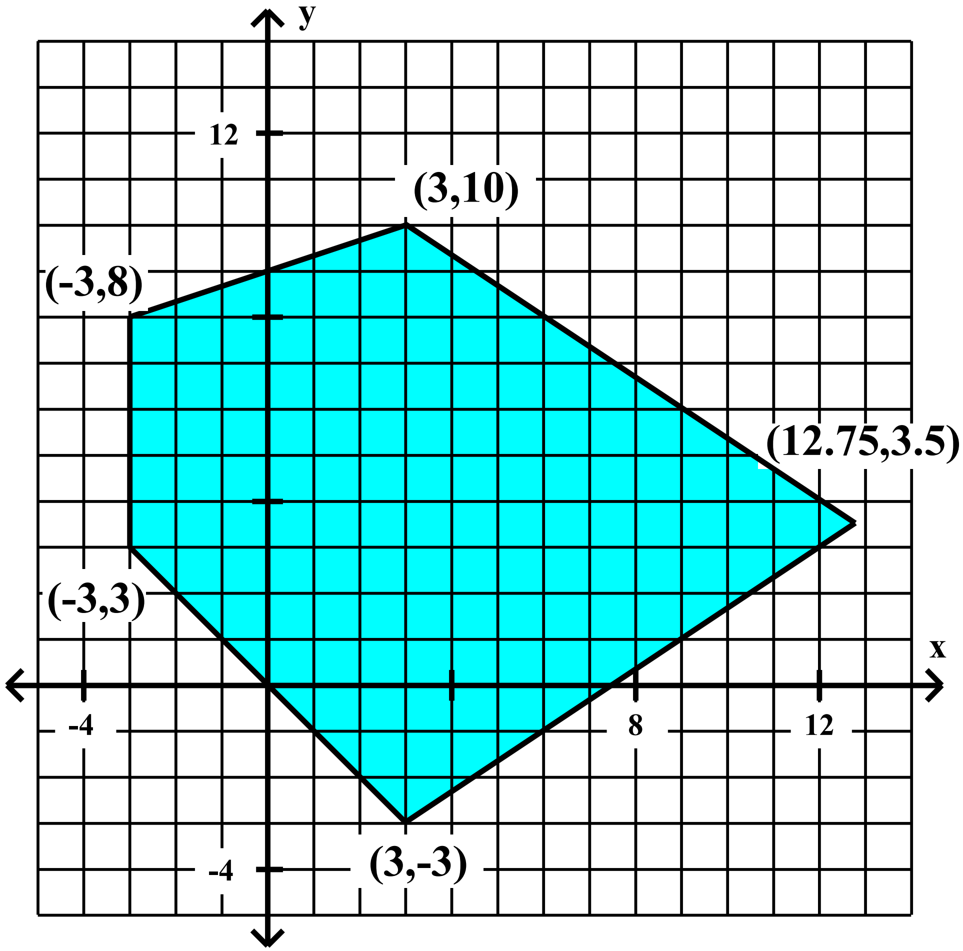
At (3,10) $\Rightarrow$ F = 3 + 20 = **23**

Algebra II Class Worksheet #4 Unit 4



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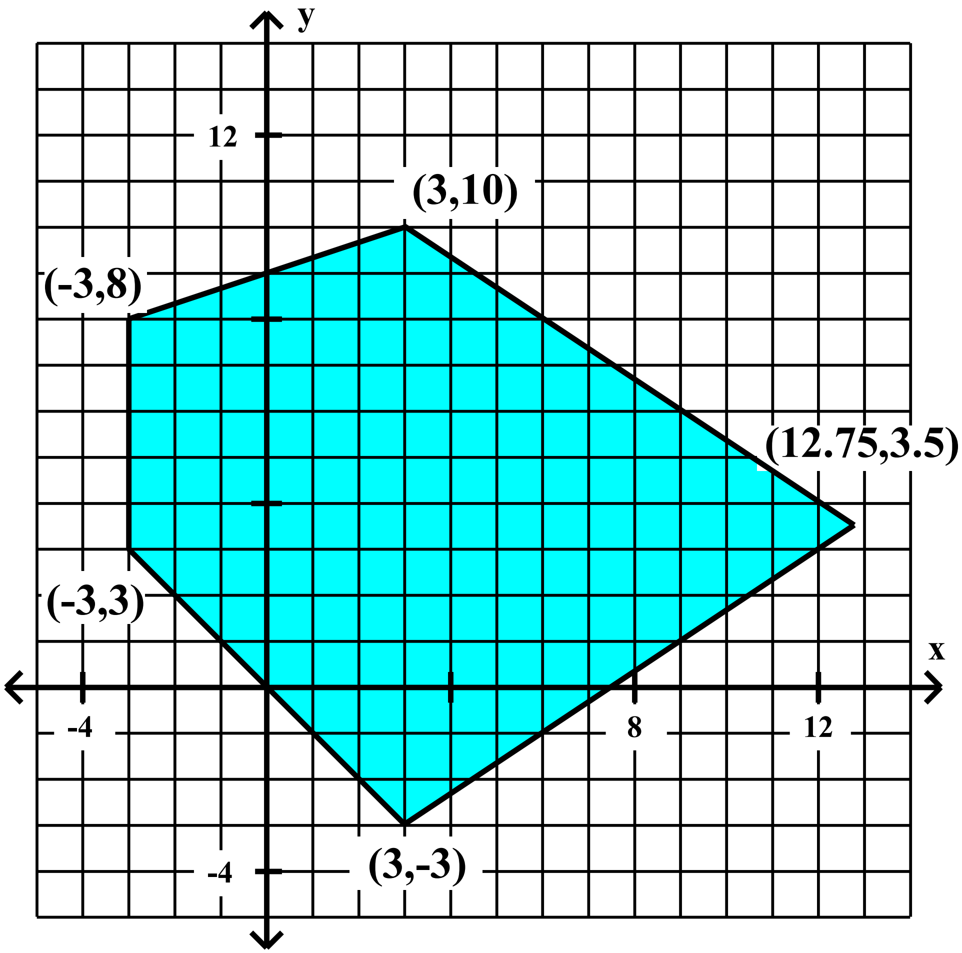
At (-3,8)

Algebra II Class Worksheet #4 Unit 4



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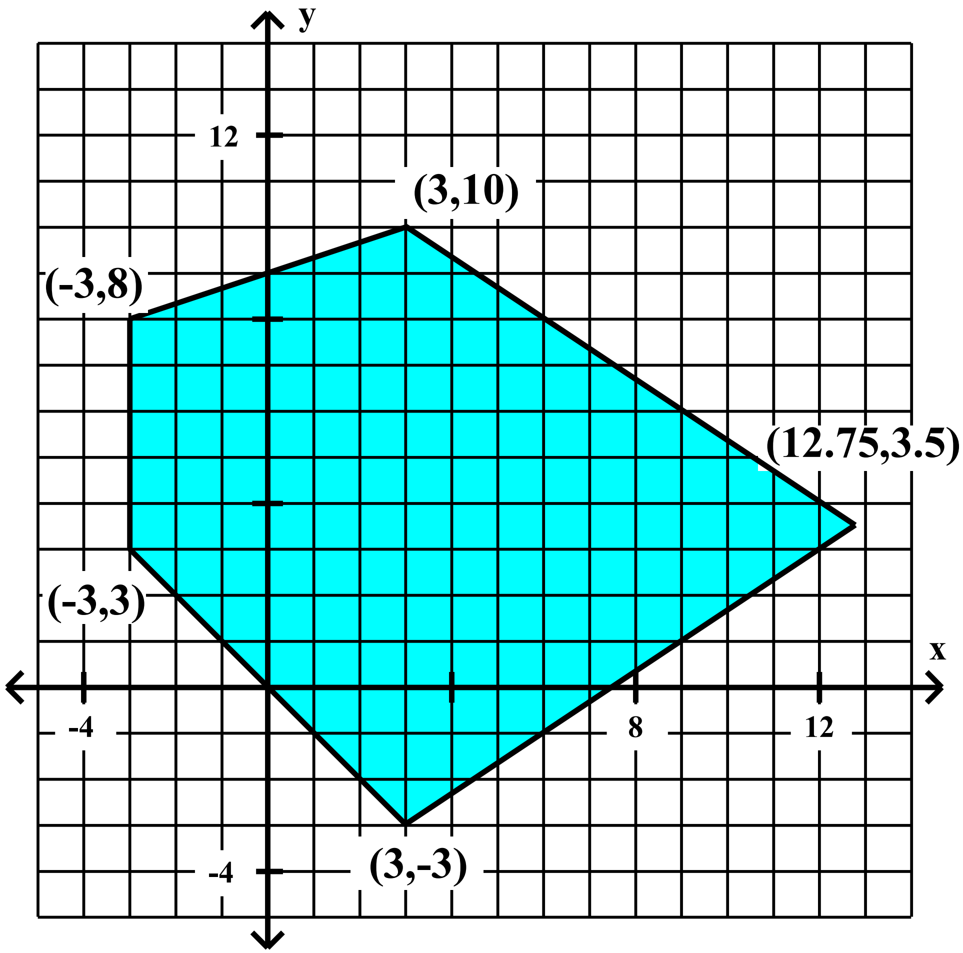
Algebra II Class Worksheet #4 Unit 4



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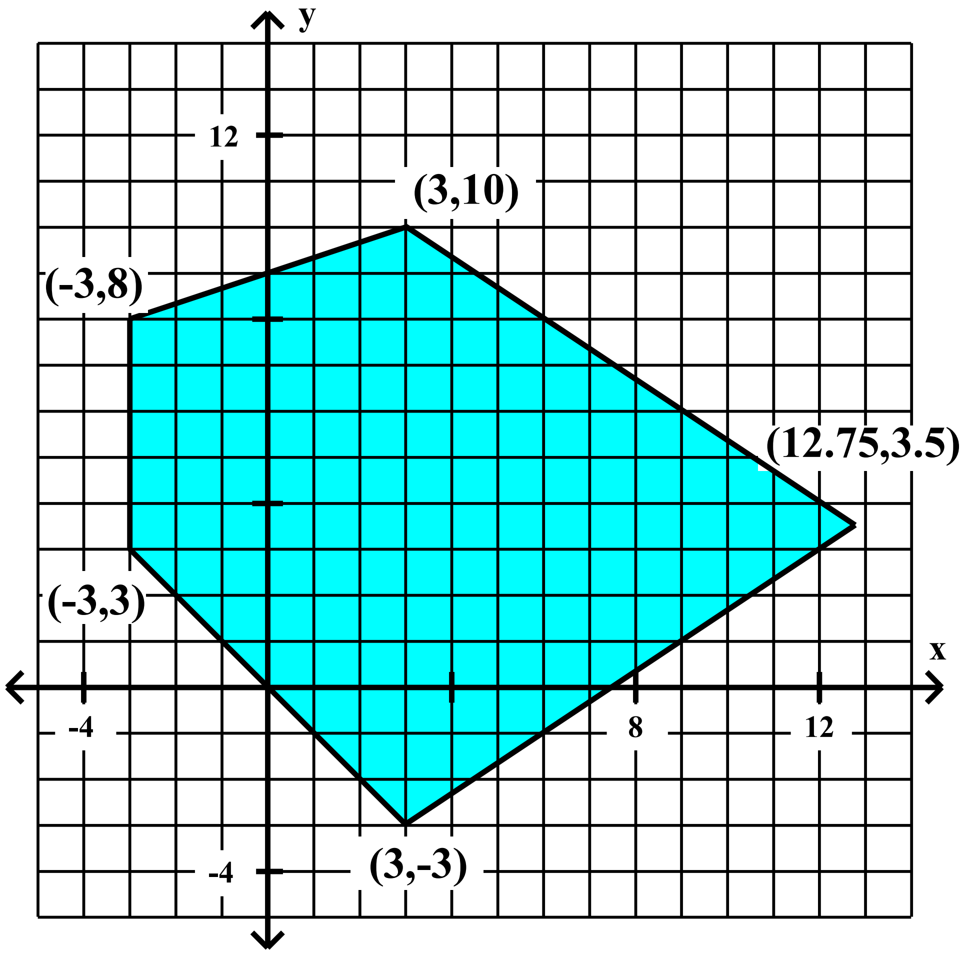
Algebra II Class Worksheet #4 Unit 4



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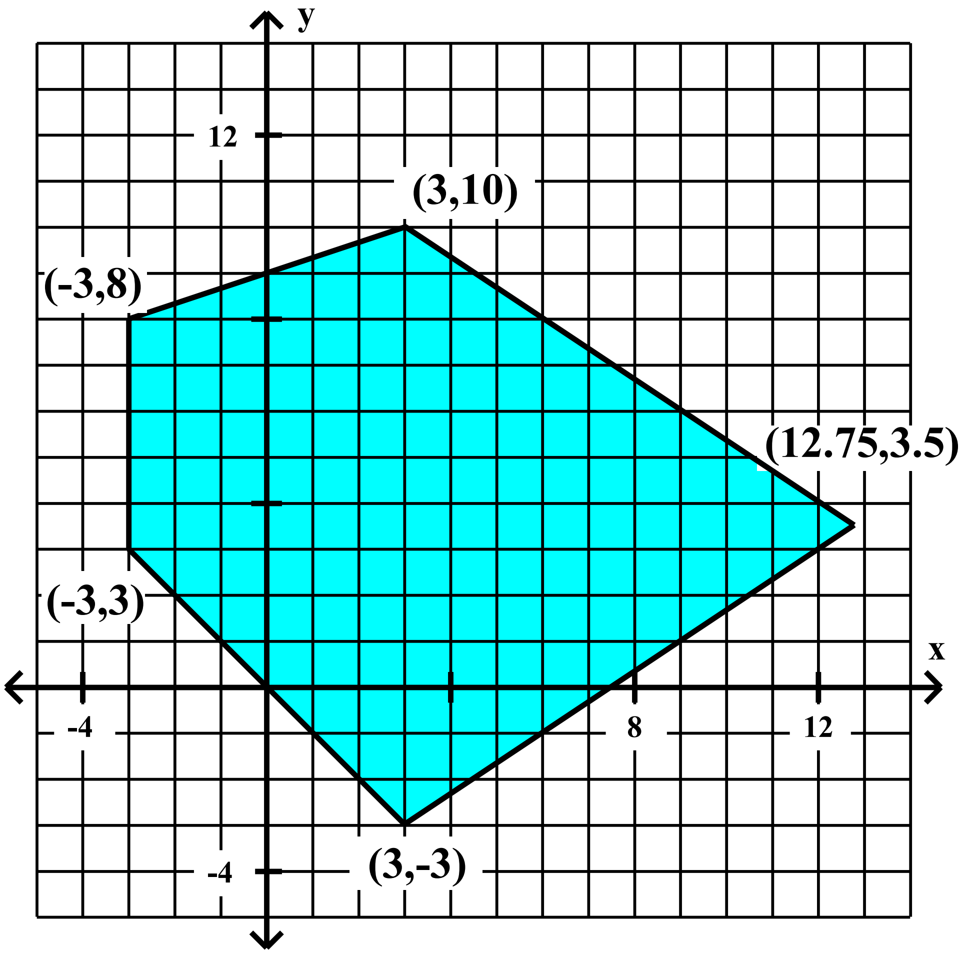

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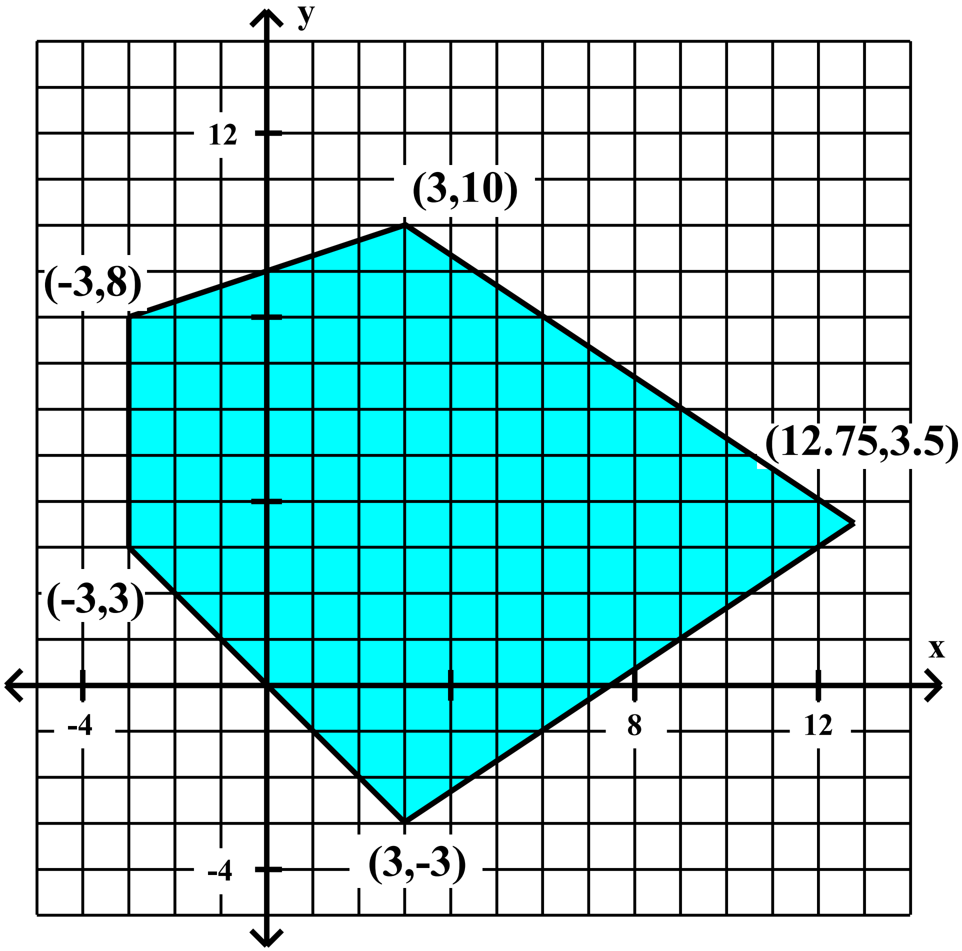
Algebra II Class Worksheet #4 Unit 4



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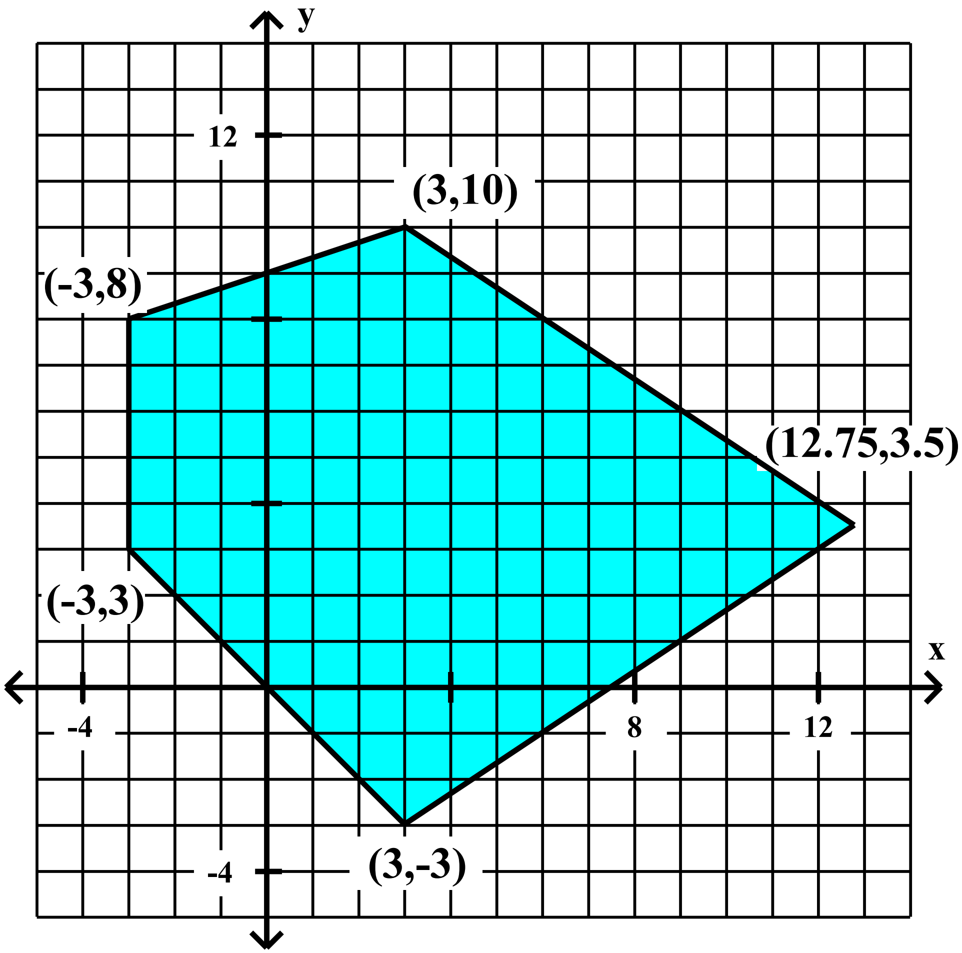

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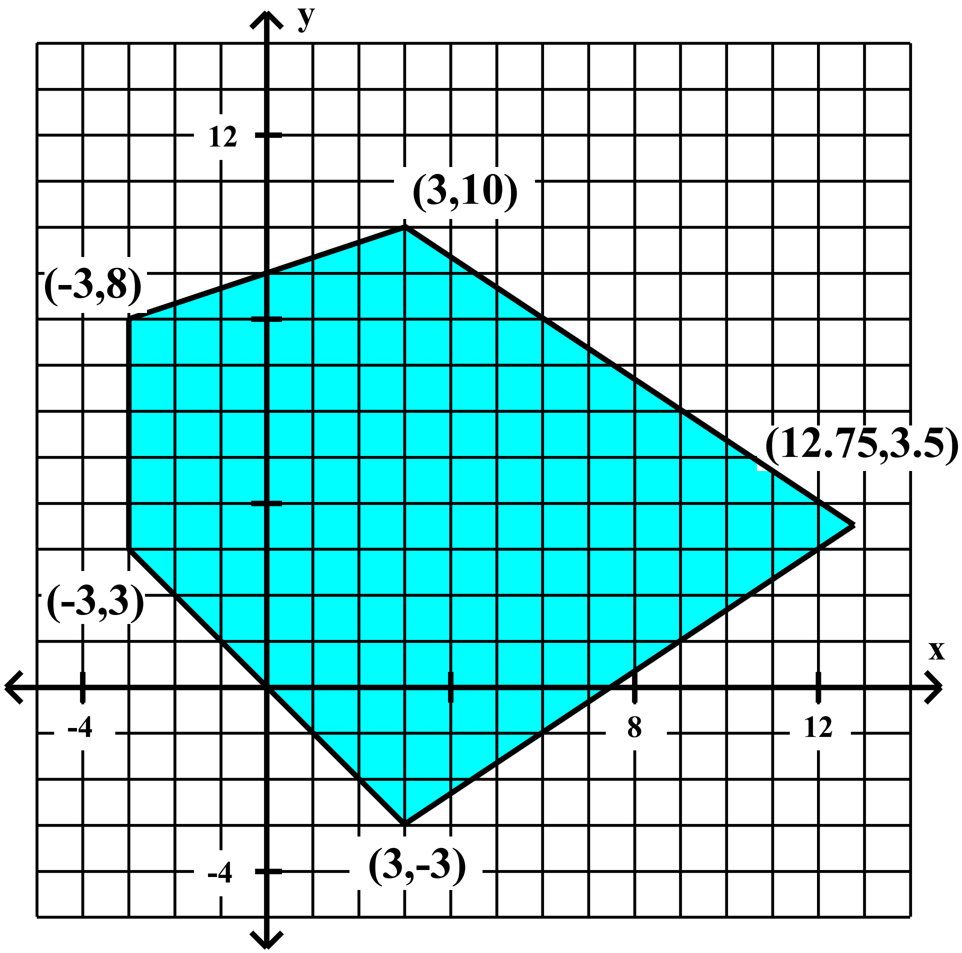
Algebra II Class Worksheet #4 Unit 4



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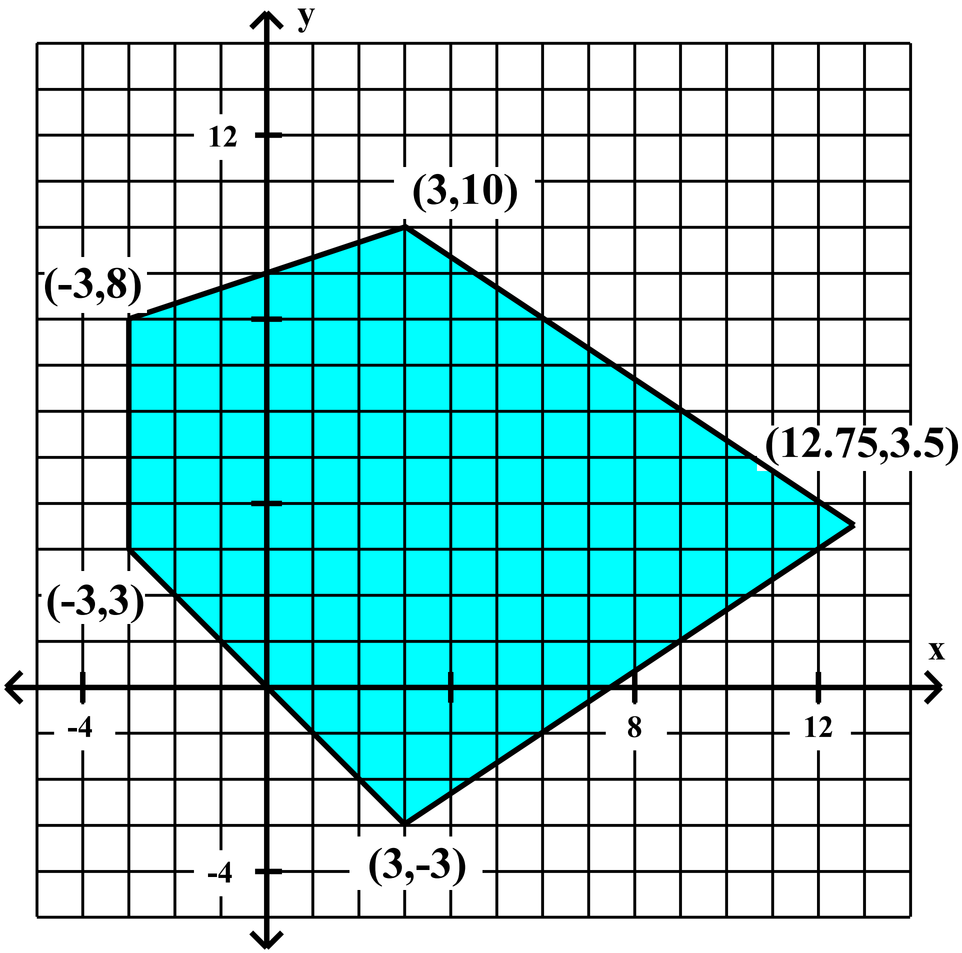
Algebra II Class Worksheet #4 Unit 4



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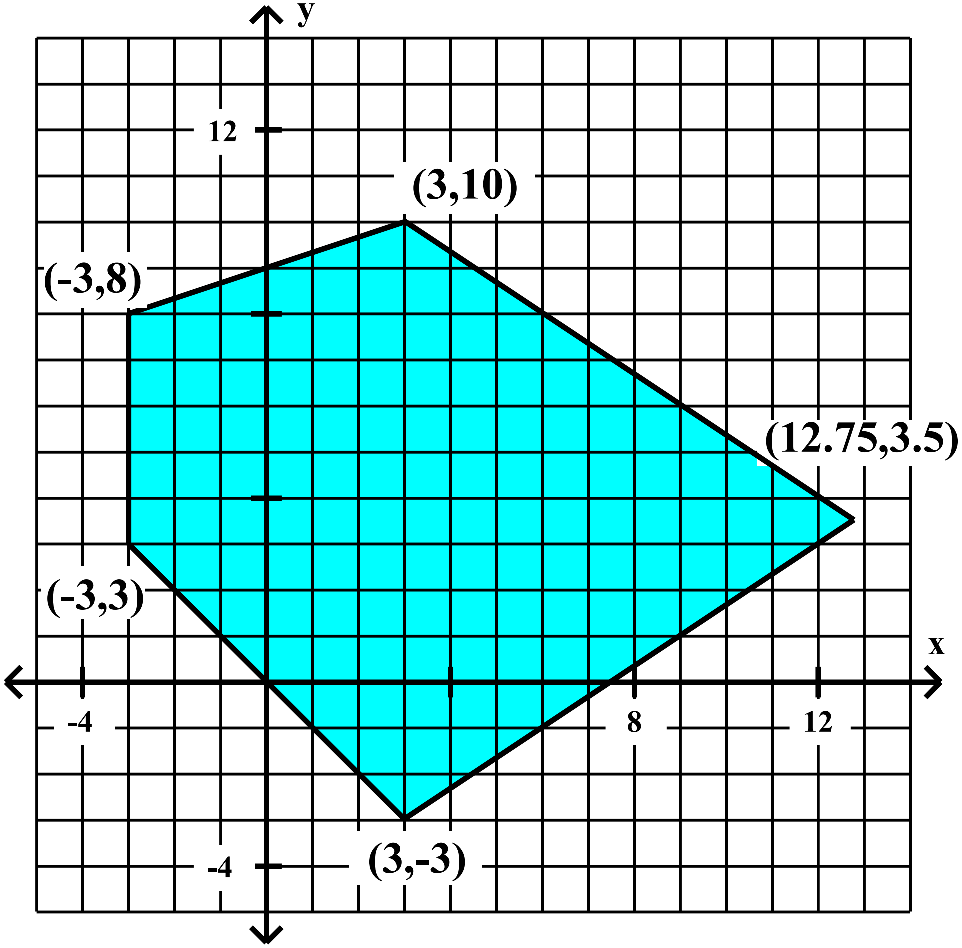

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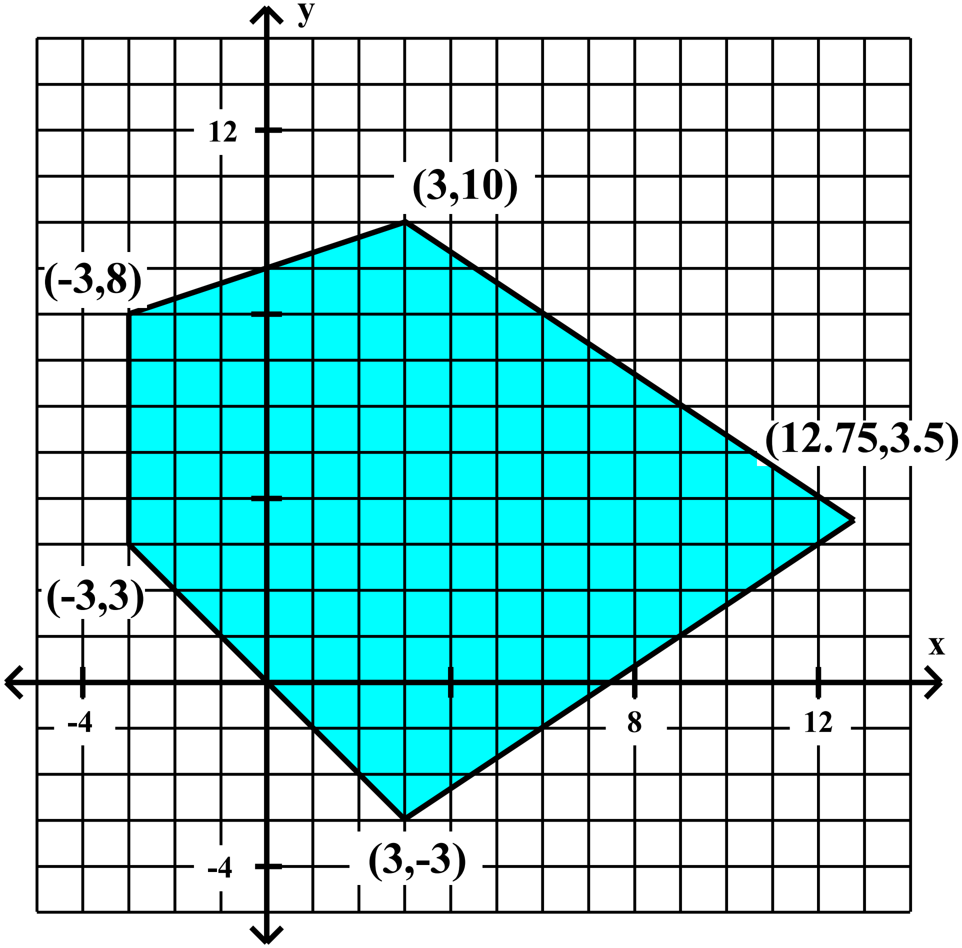
Algebra II Class Worksheet #4 Unit 4



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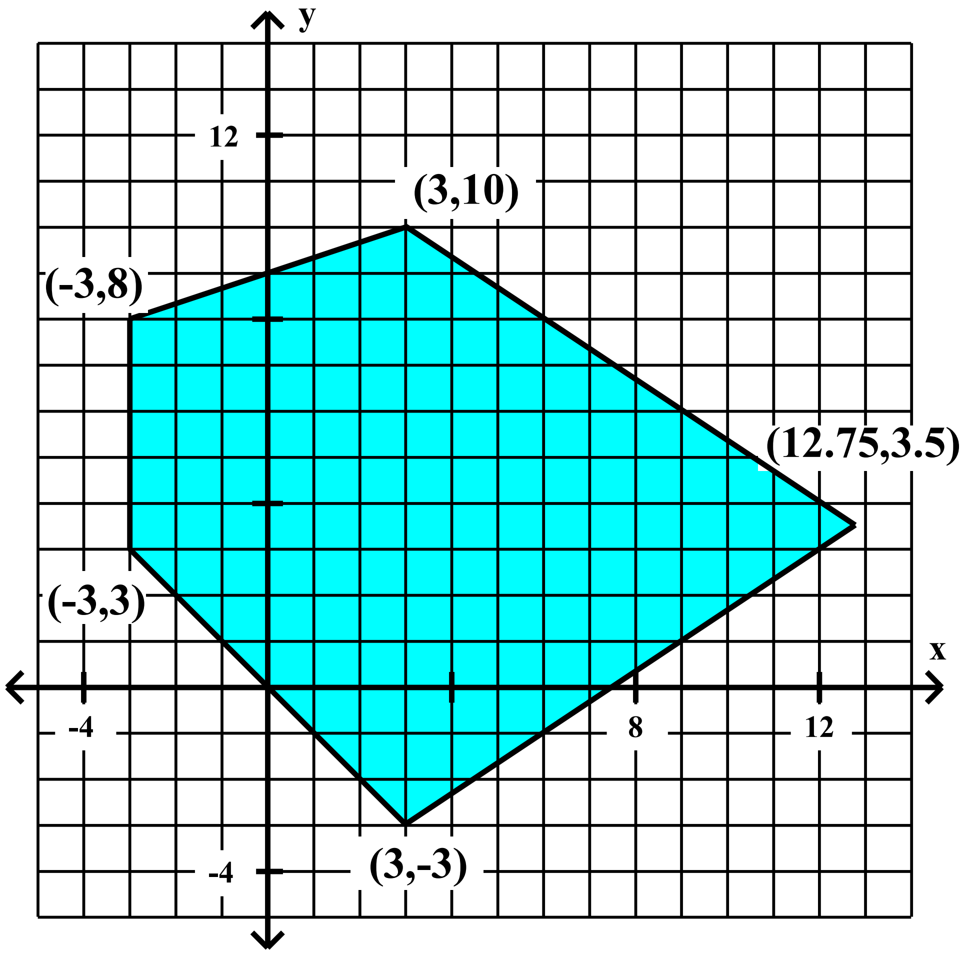
Algebra II Class Worksheet #4 Unit 4



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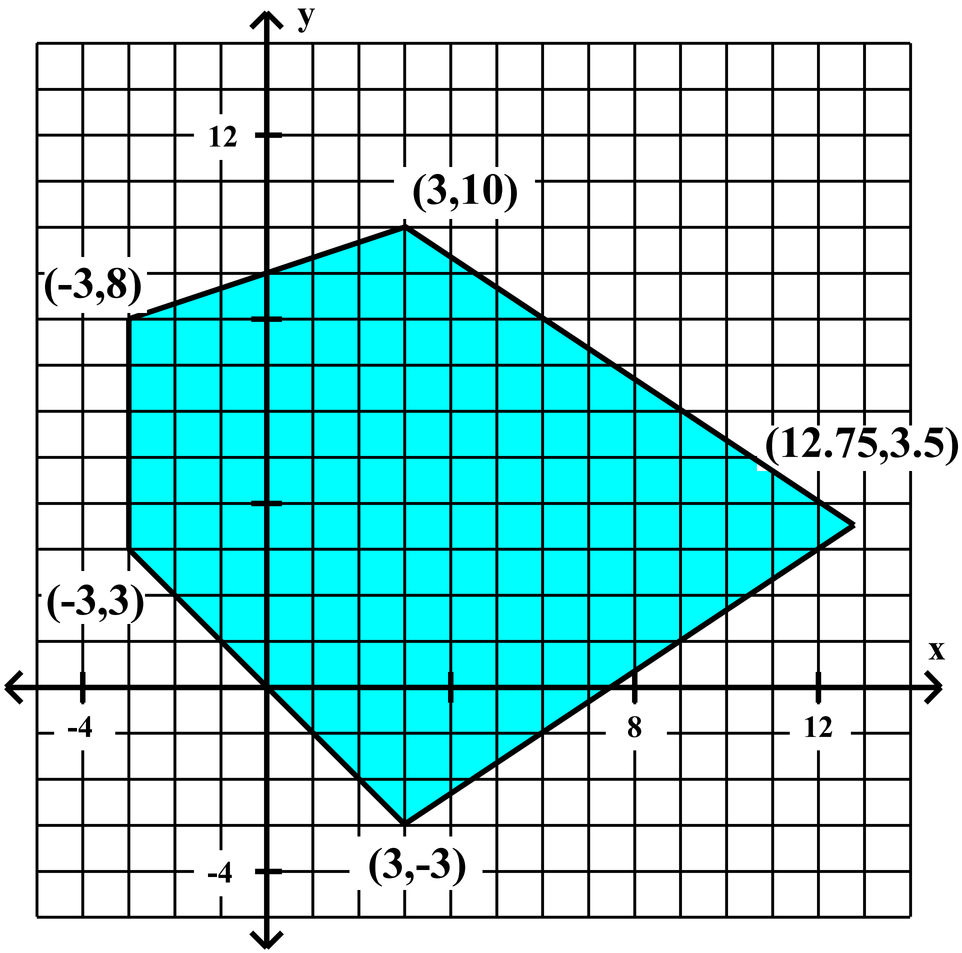
At (-3,3) ⇨ F = -3 + 6

Algebra II Class Worksheet #4 Unit 4



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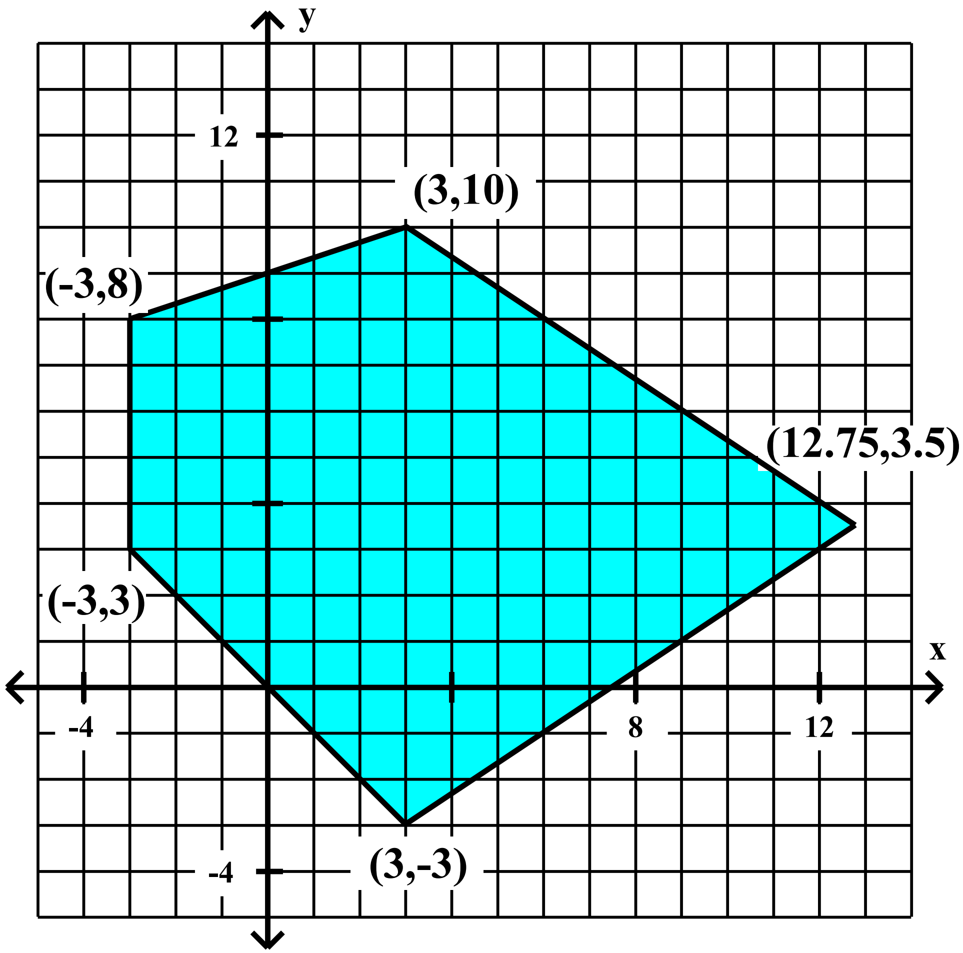
Algebra II   Class Worksheet #4   Unit 4



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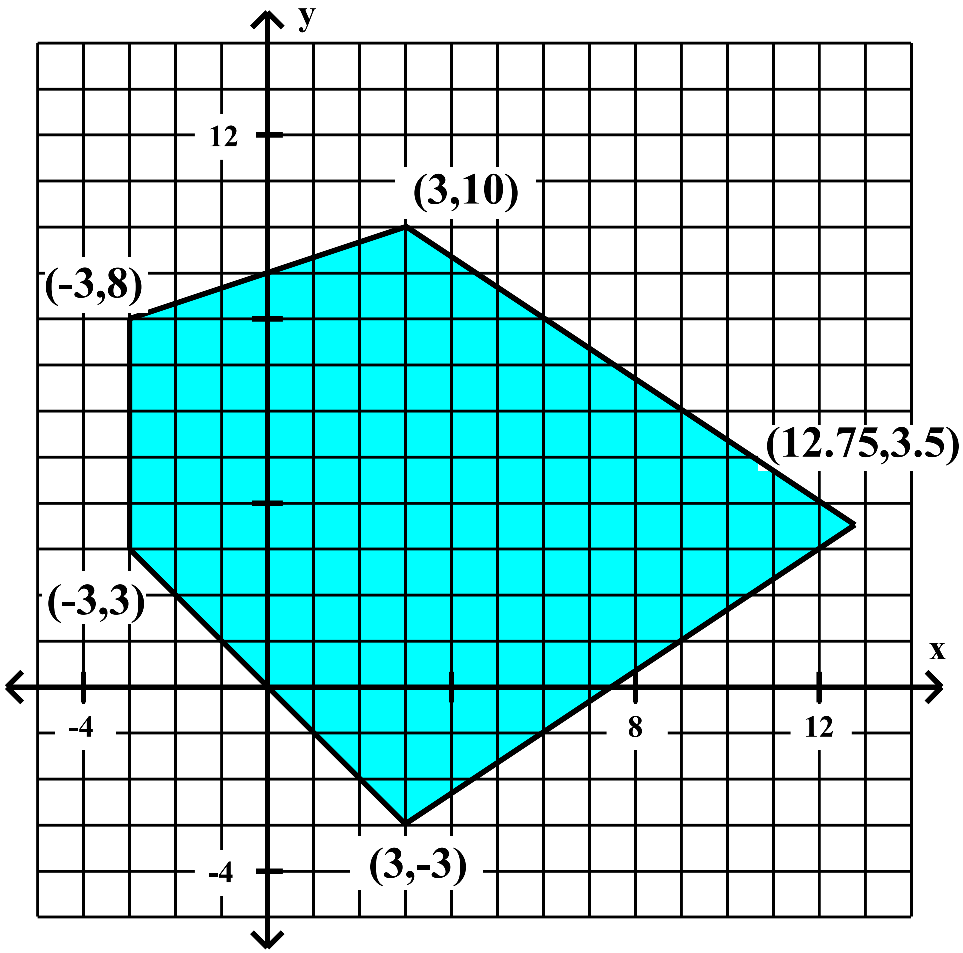
Algebra II Class Worksheet #4 Unit 4



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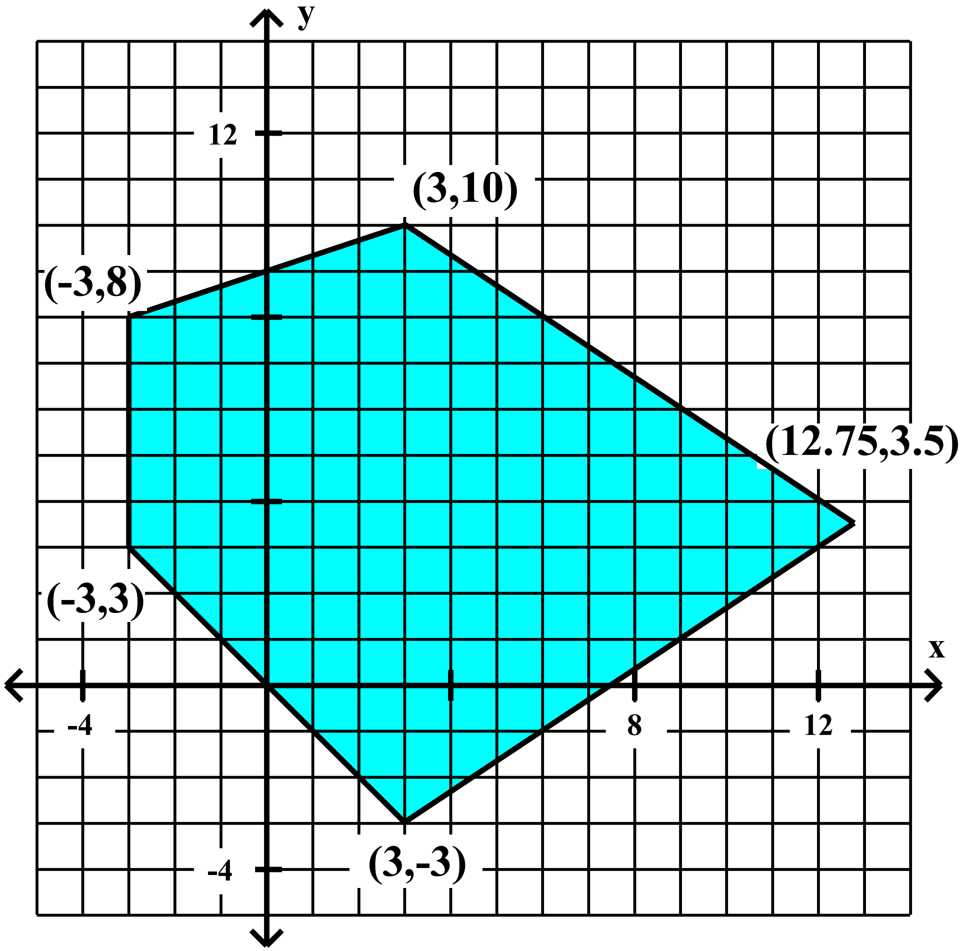
At (3,-3)

Algebra II   Class Worksheet #4   Unit 4



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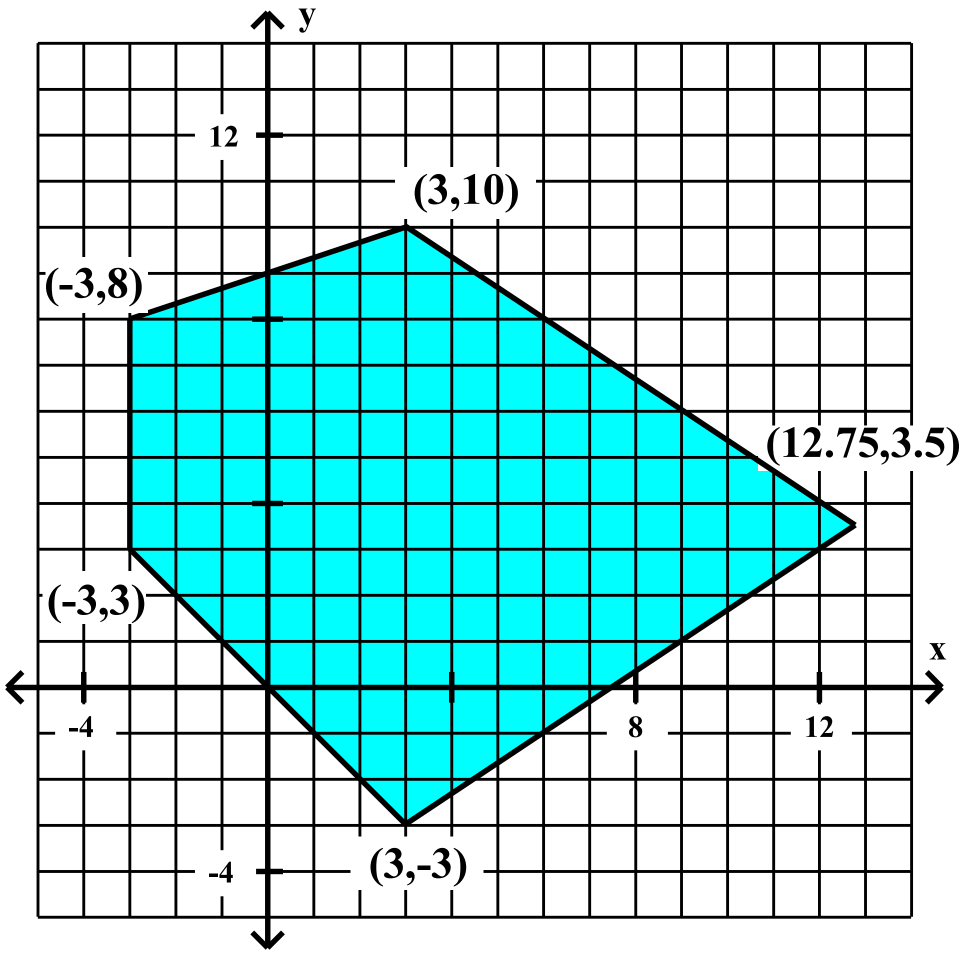
Algebra II Class Worksheet #4 Unit 4



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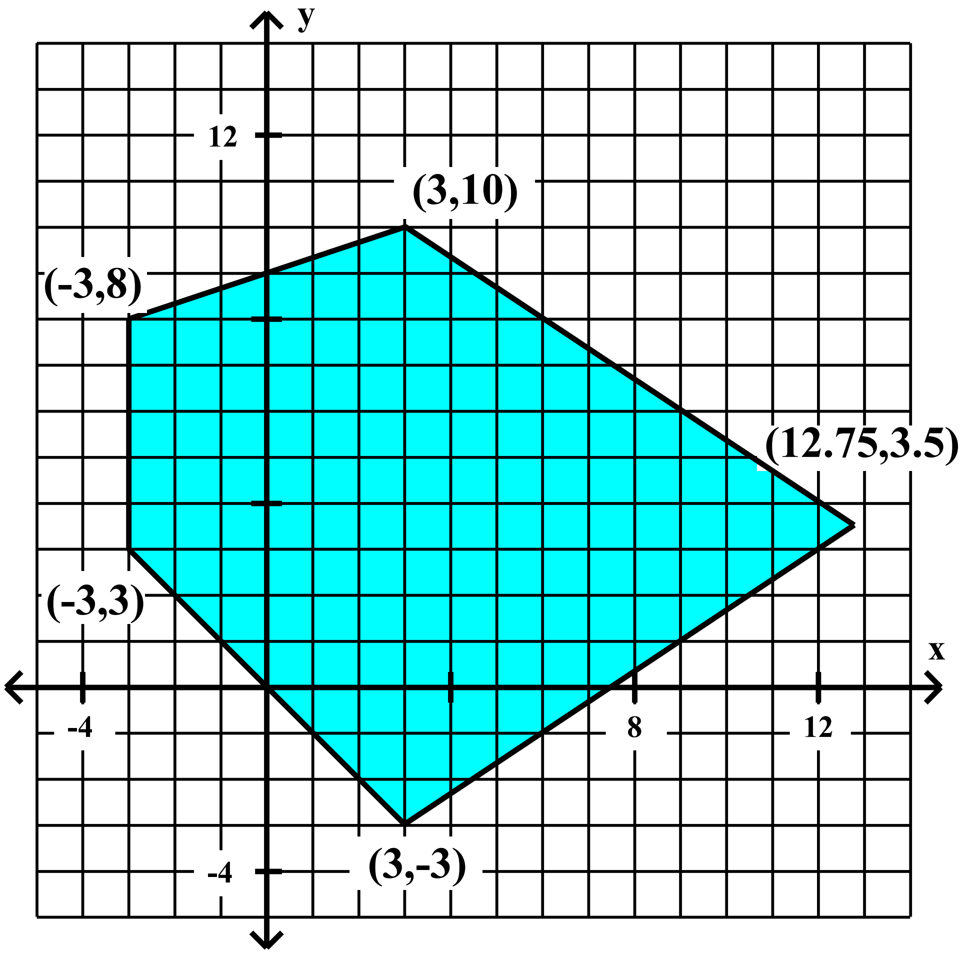
Algebra II Class Worksheet #4 Unit 4



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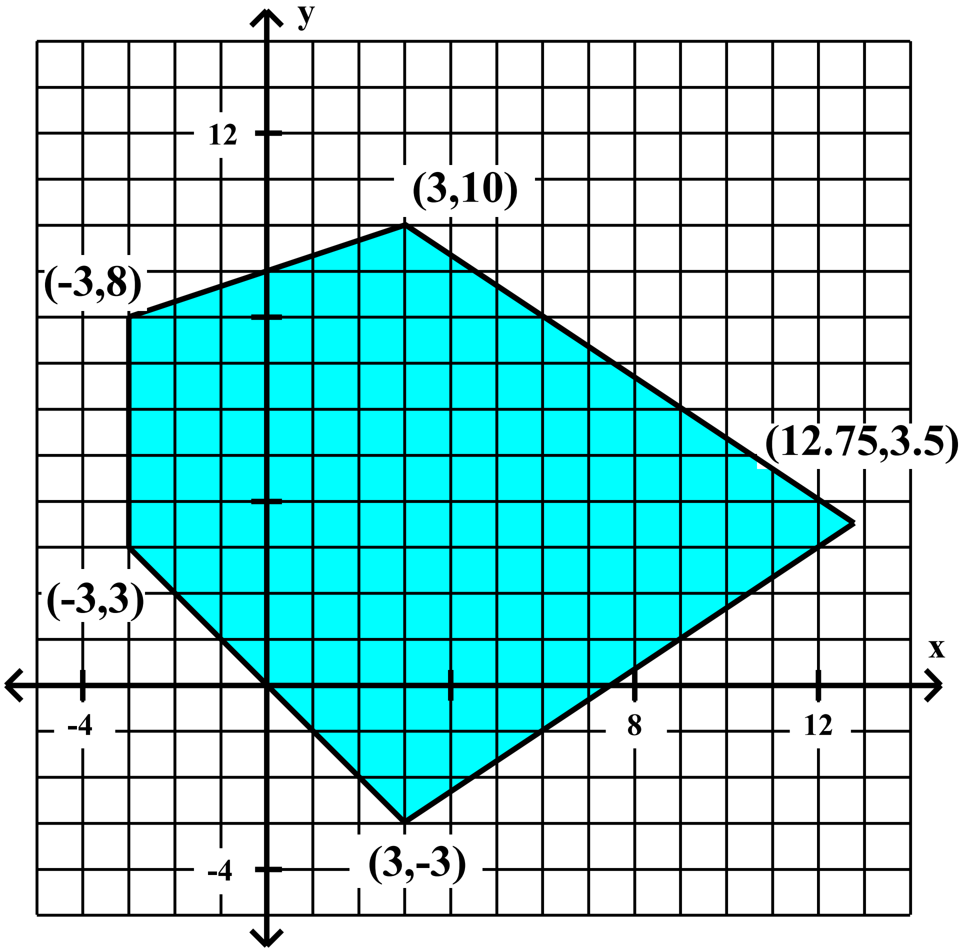
Algebra II Class Worksheet #4 Unit 4



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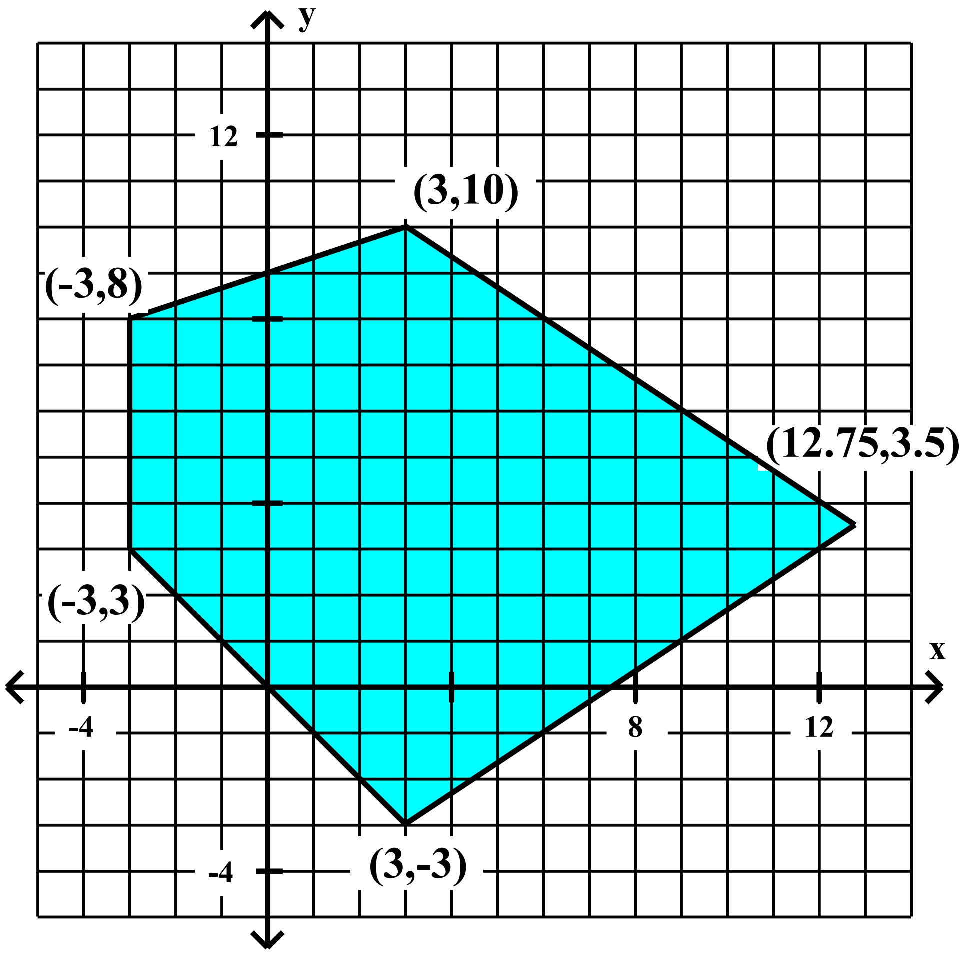
Algebra II Class Worksheet #4 Unit 4



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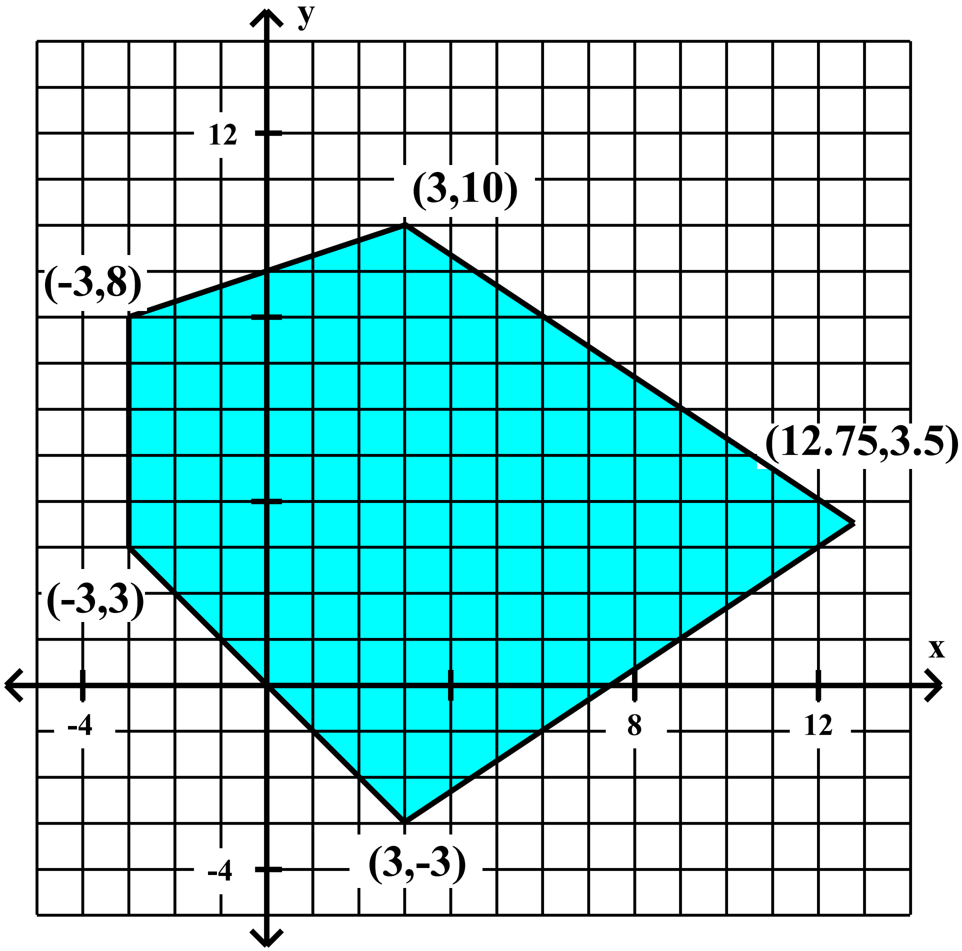
Algebra II   Class Worksheet #4   Unit 4



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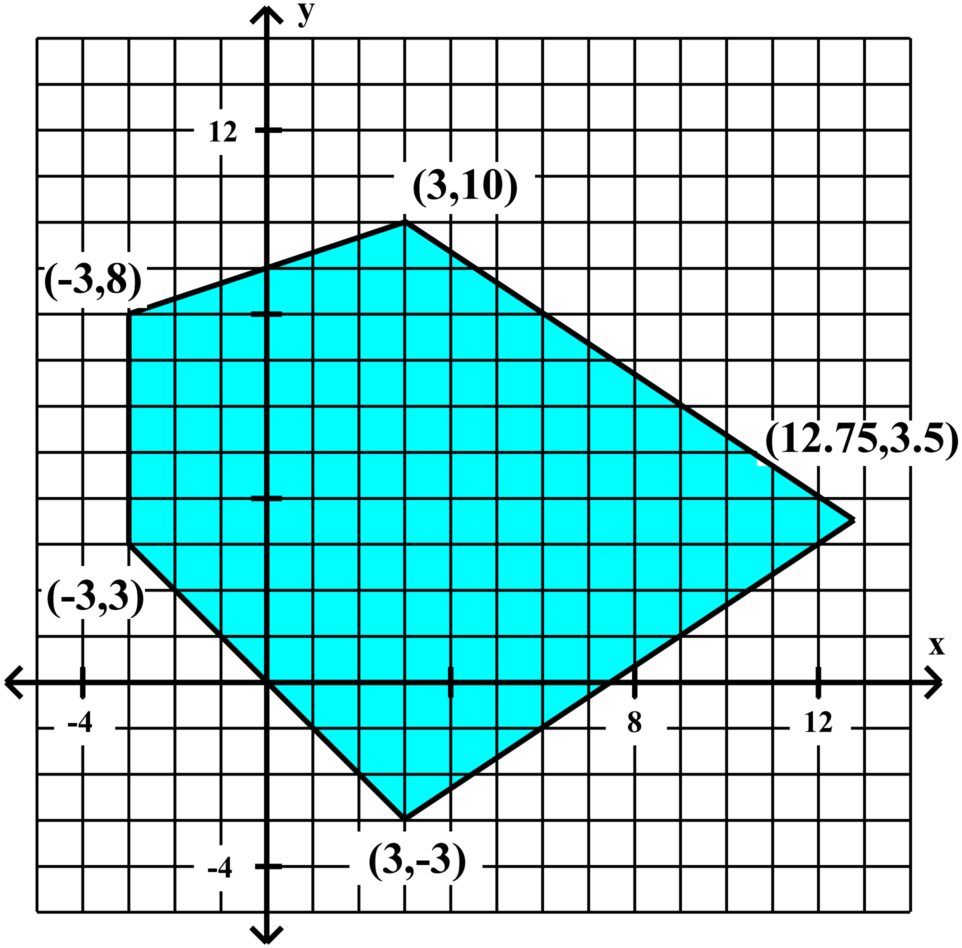
Algebra II Class Worksheet #4 Unit 4



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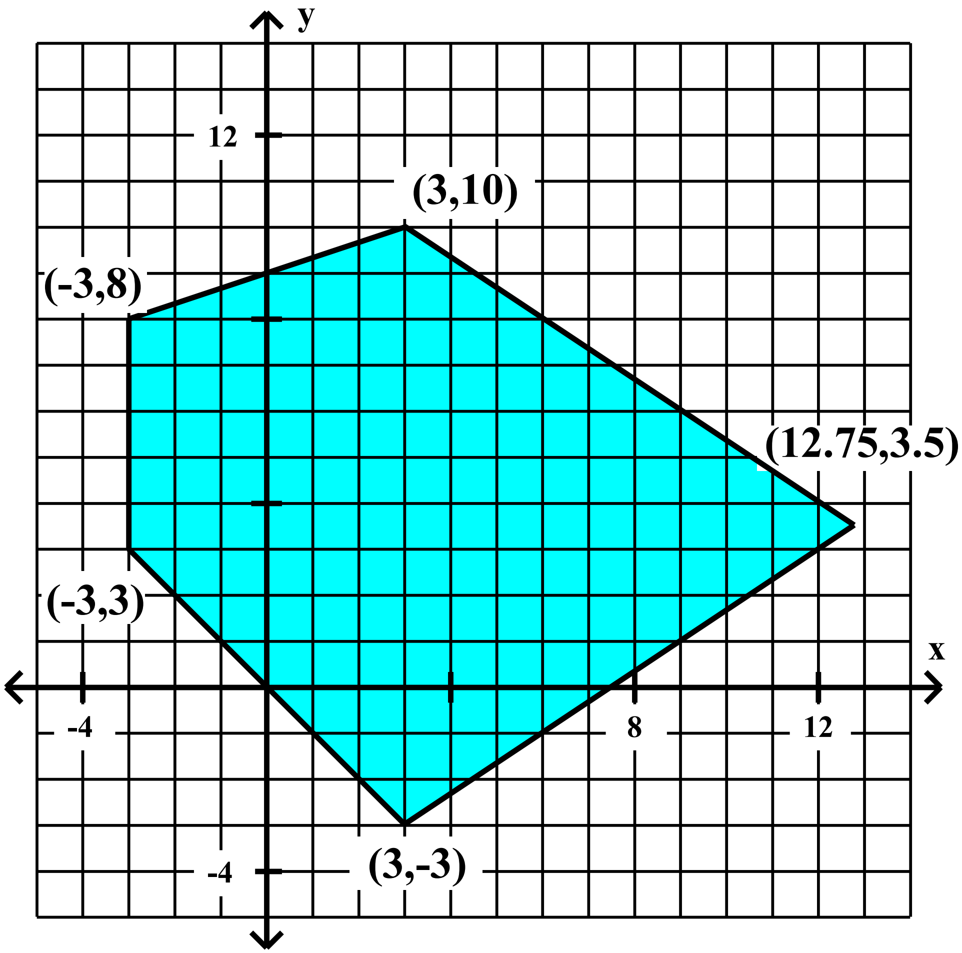
At (12.75,3.5) ⇨

Algebra II Class Worksheet #4 Unit 4



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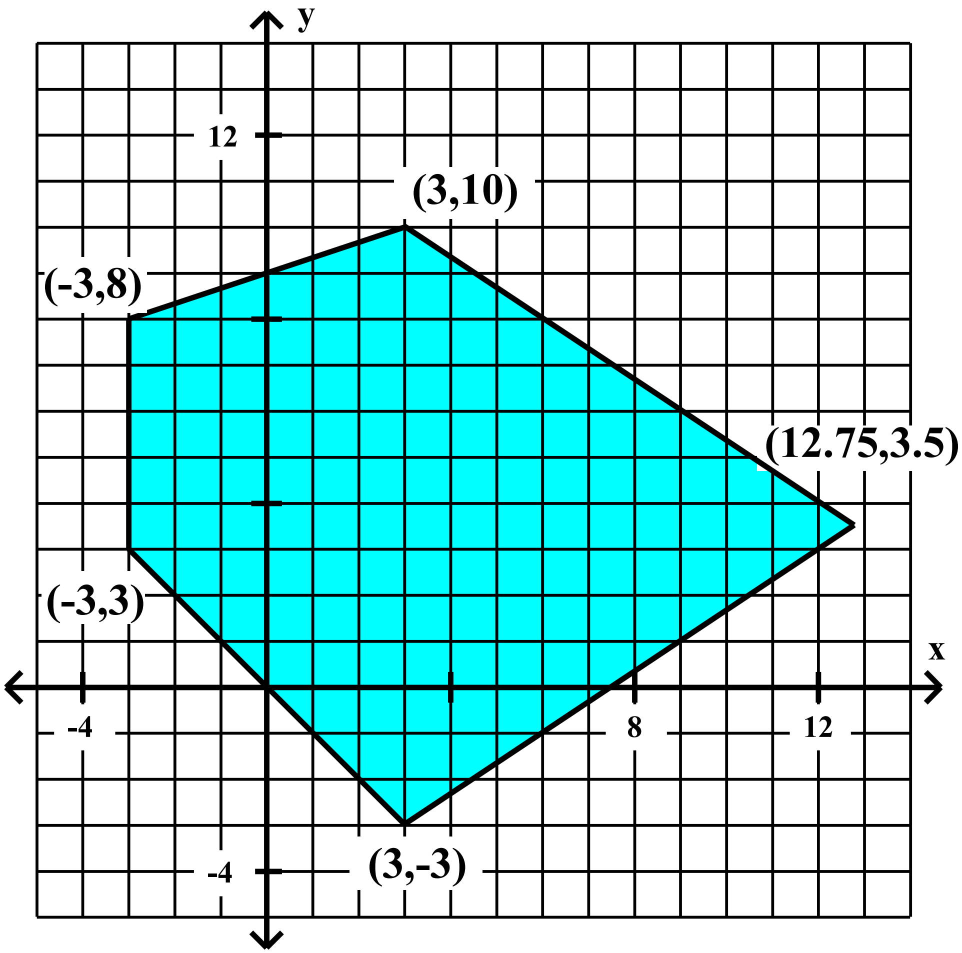
Algebra II Class Worksheet #4 Unit 4



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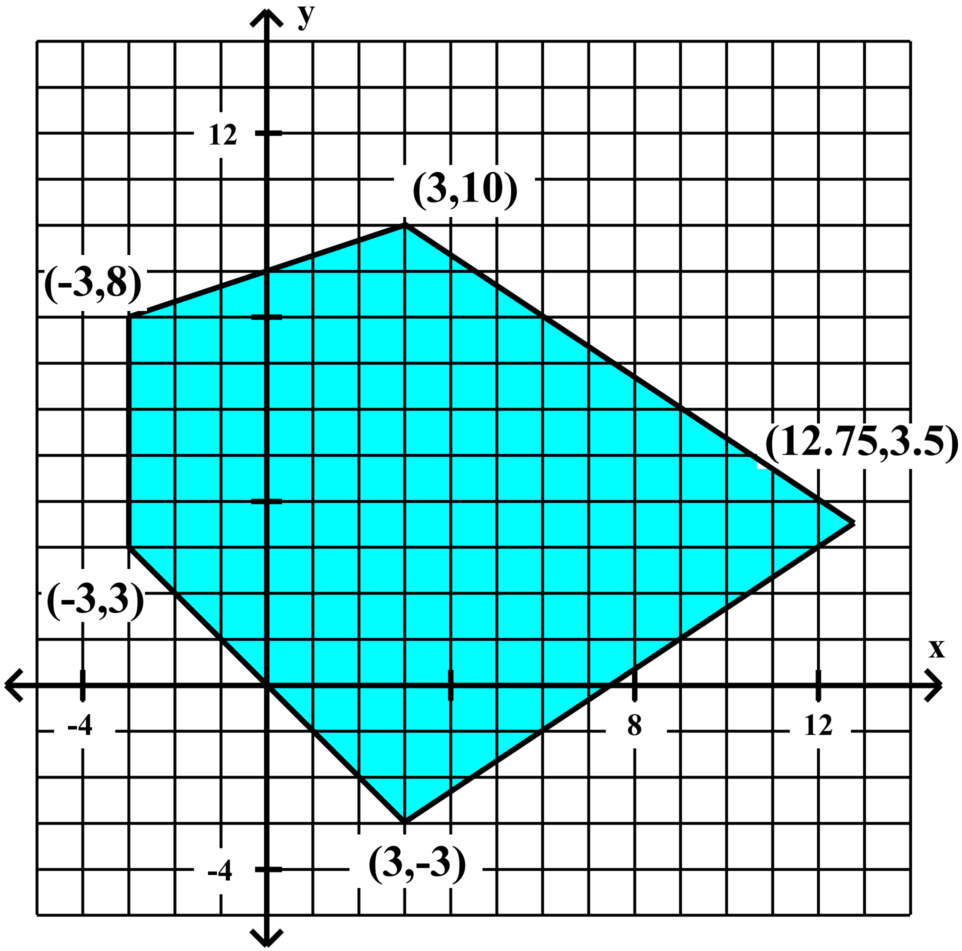
Algebra II Class Worksheet #4 Unit 4



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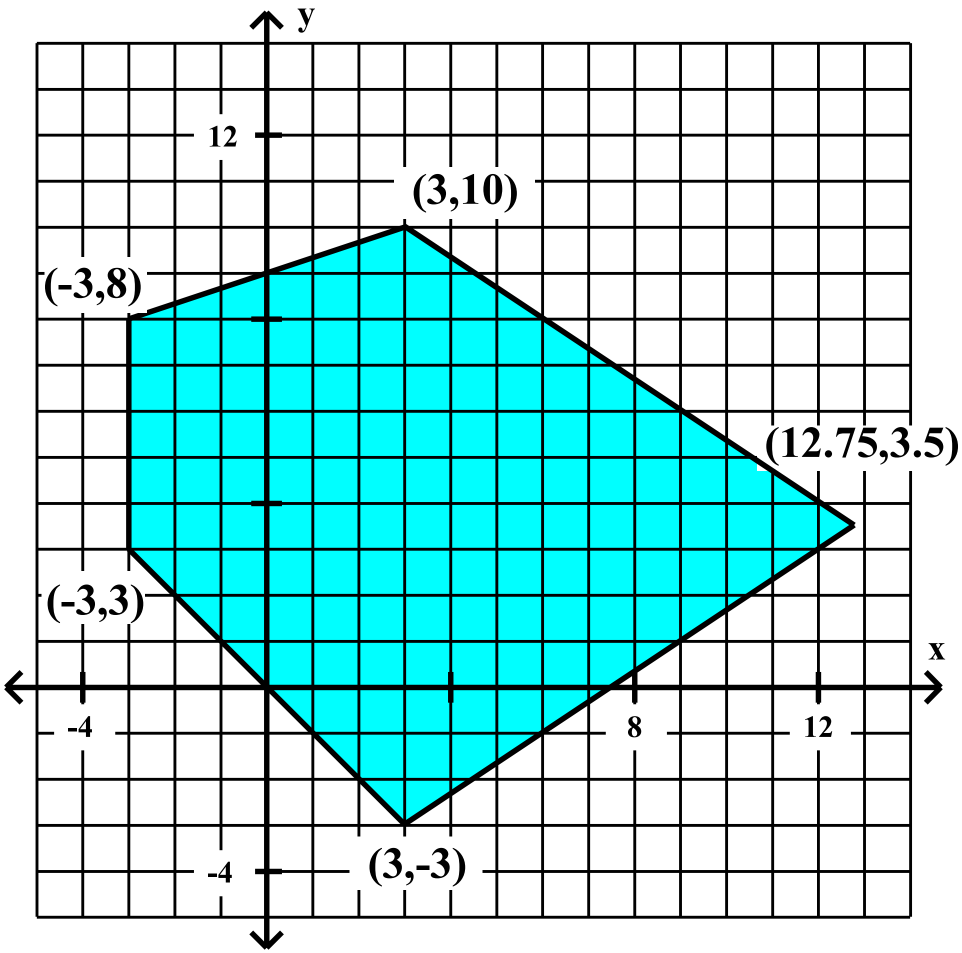

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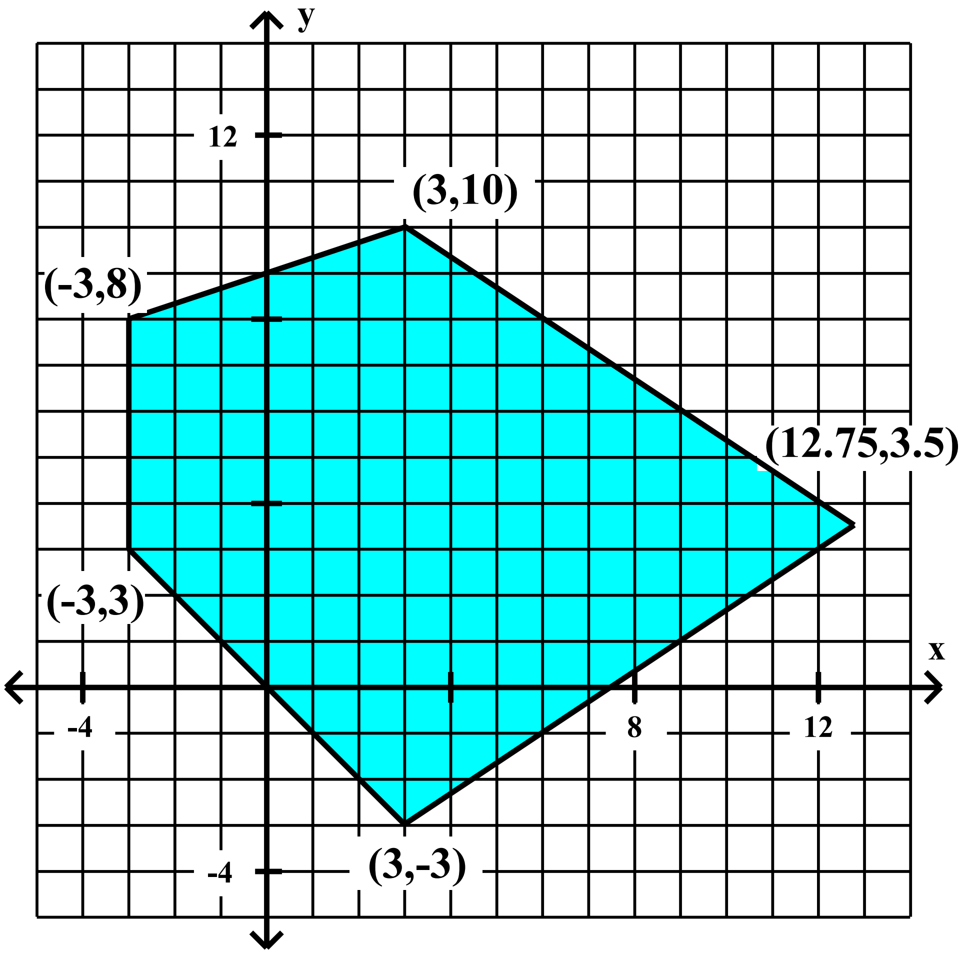
Algebra II Class Worksheet #4 Unit 4



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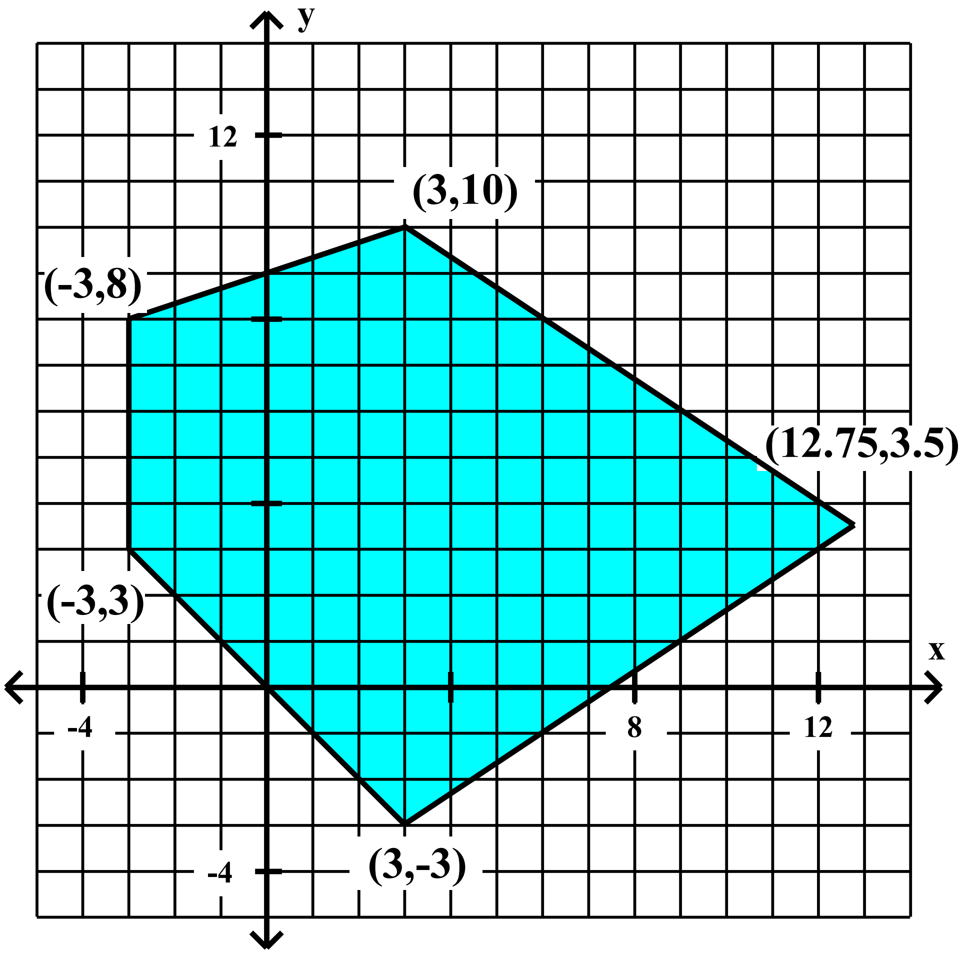

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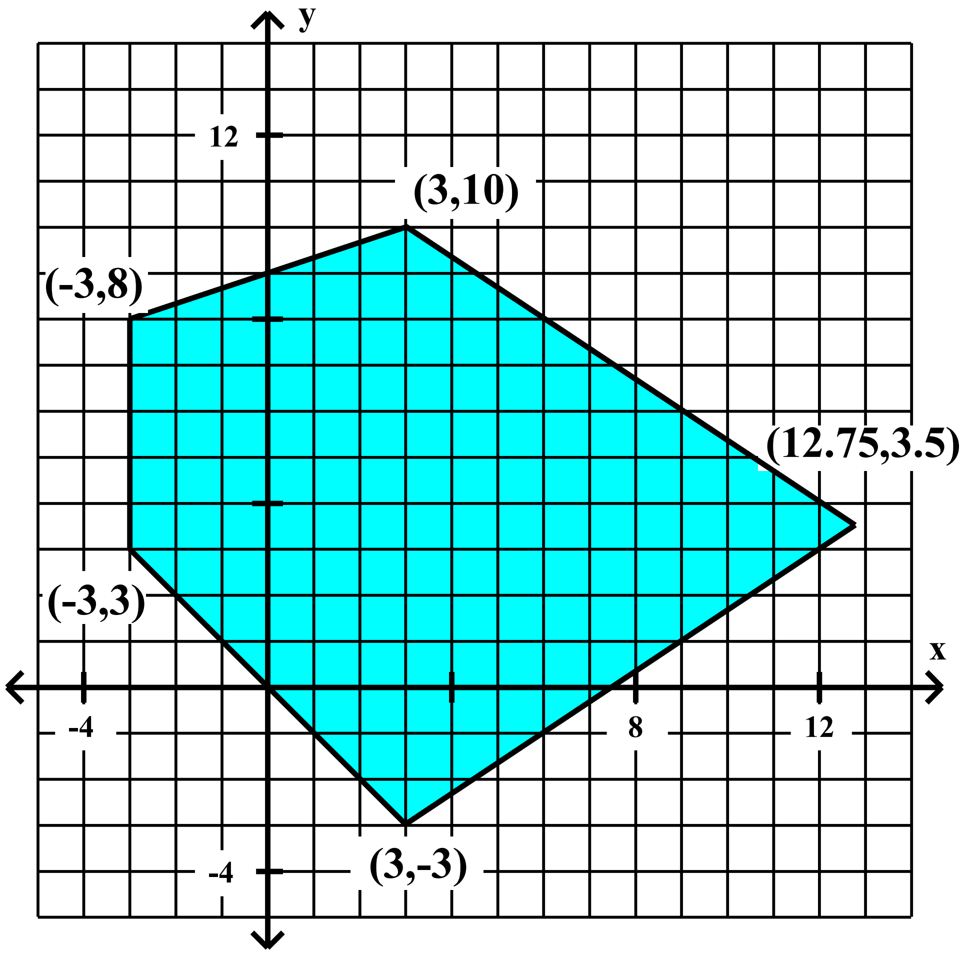
Algebra II Class Worksheet #4 Unit 4



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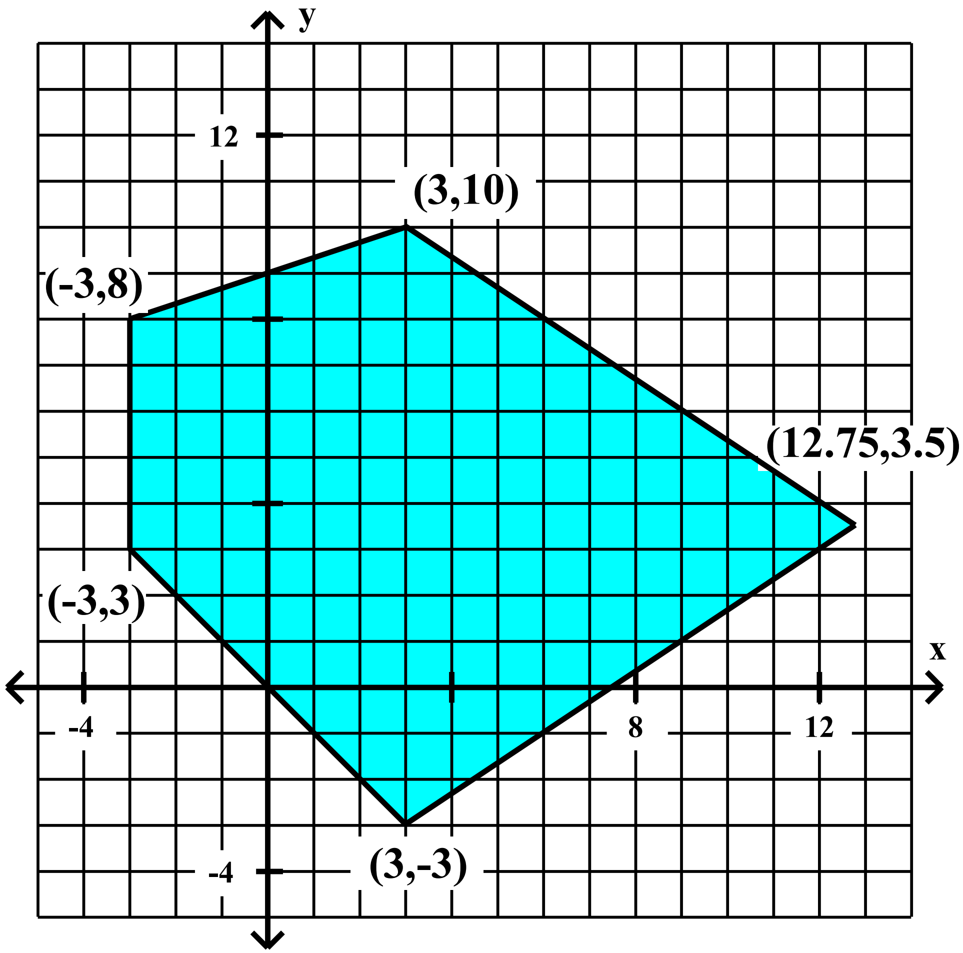

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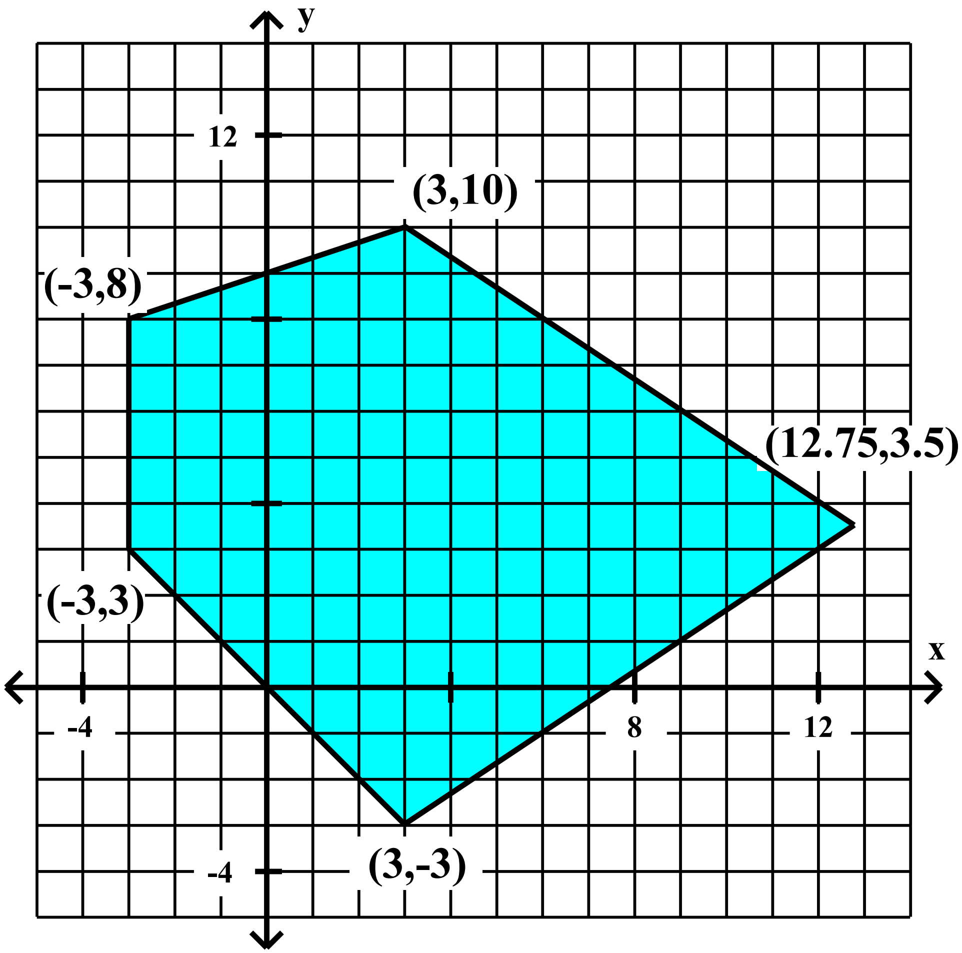

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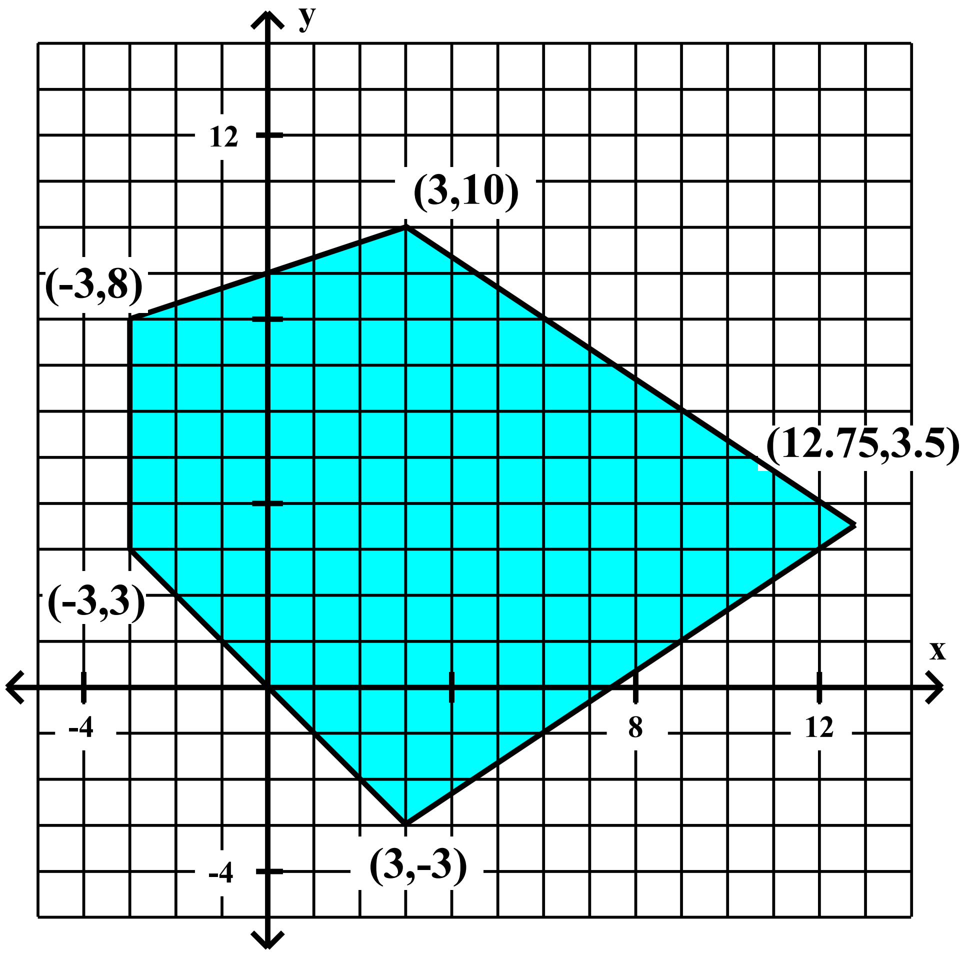

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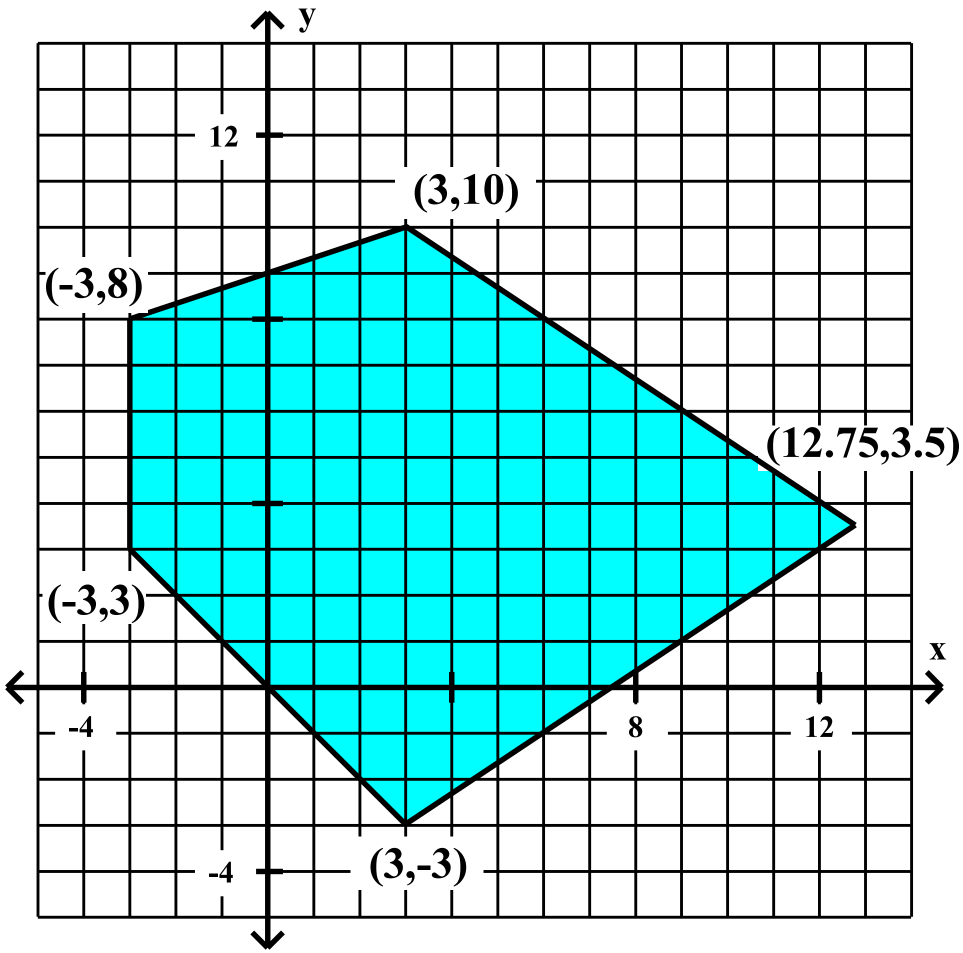

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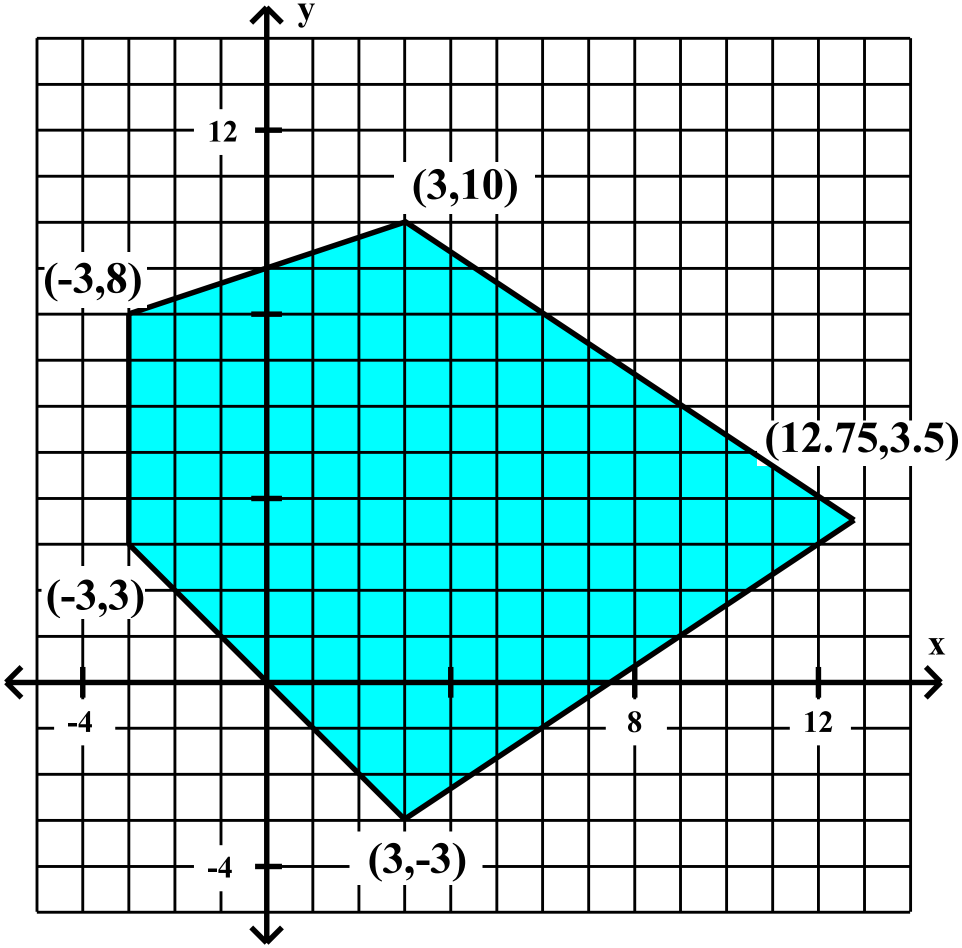

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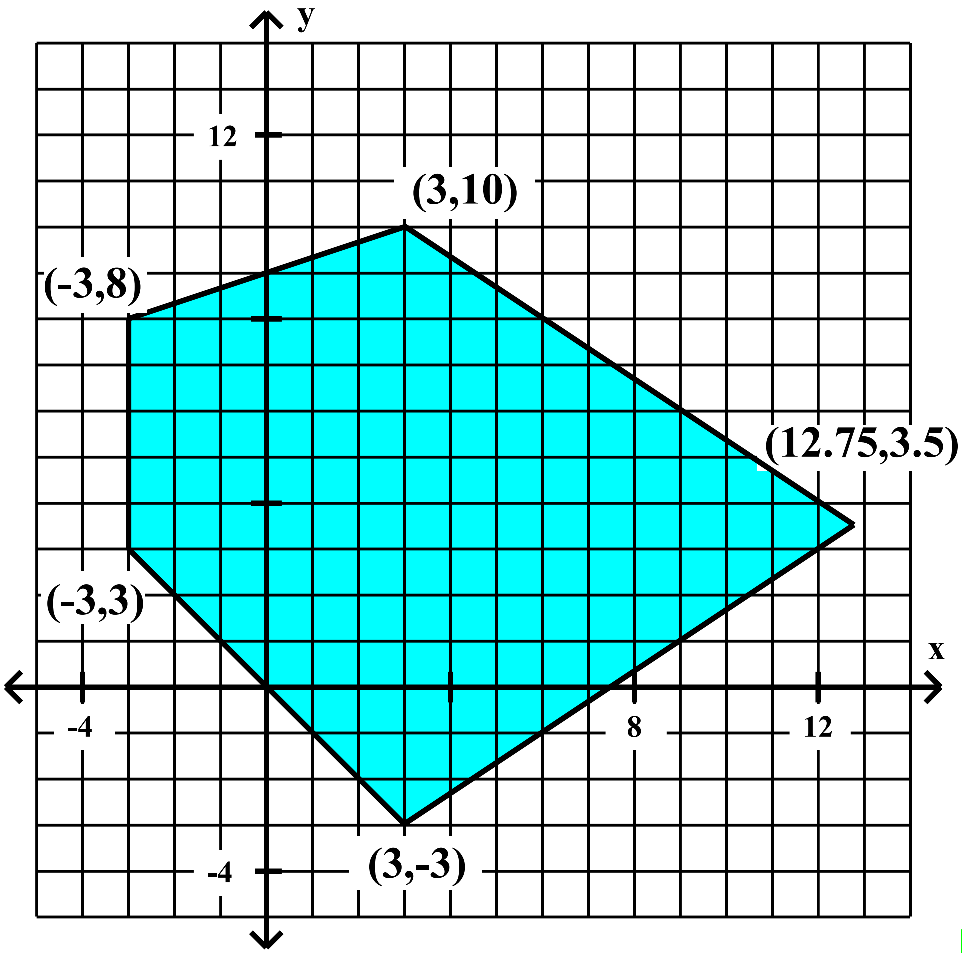

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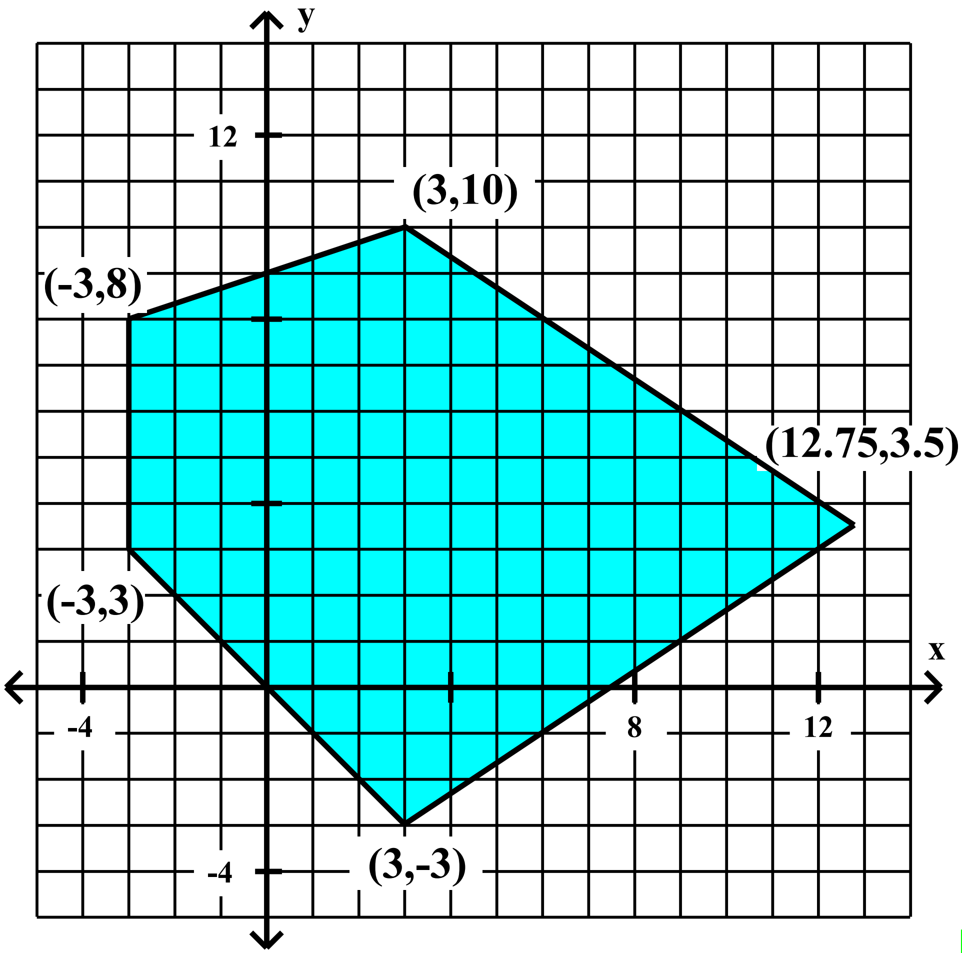
Algebra II   Class Worksheet #4   Unit 4



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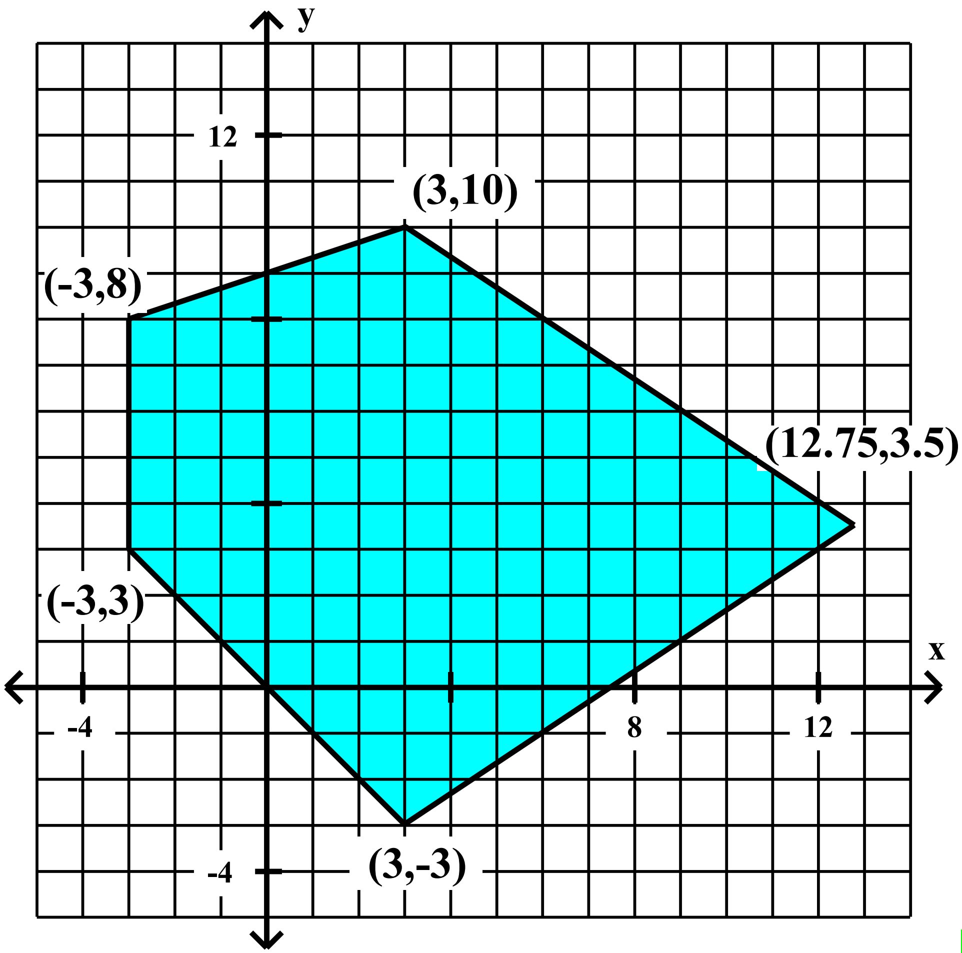

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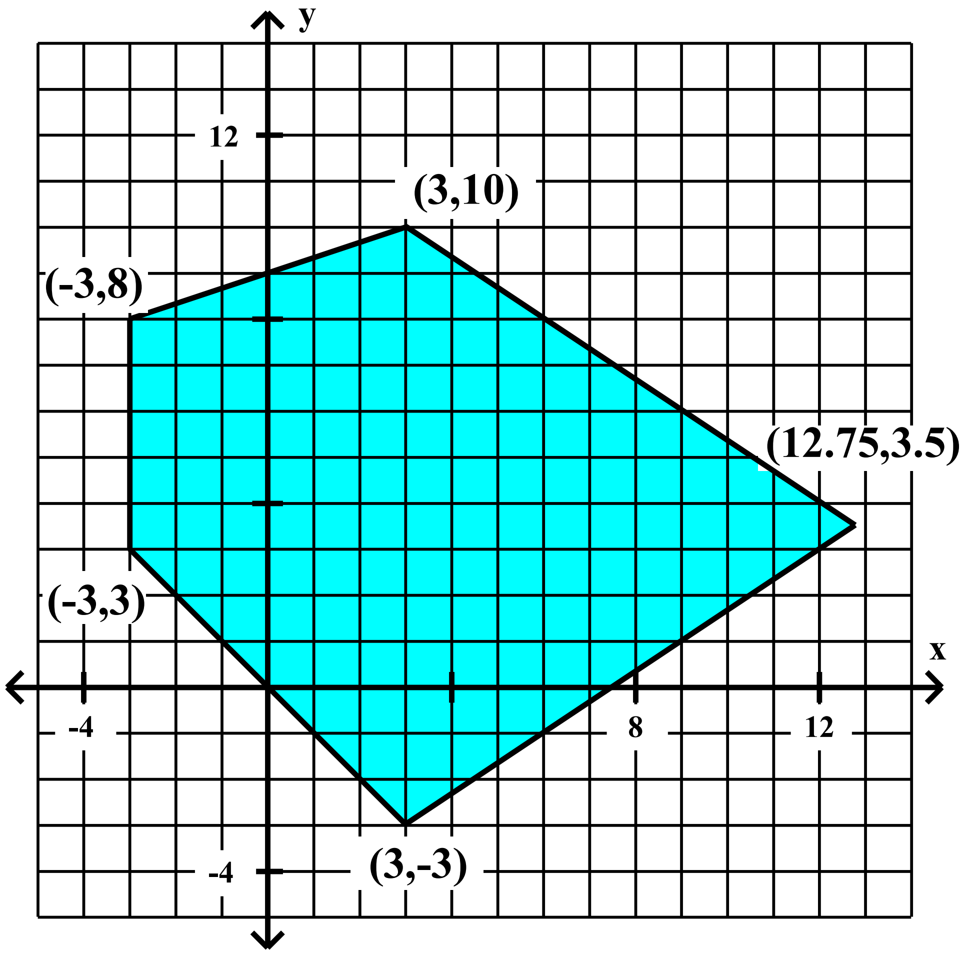

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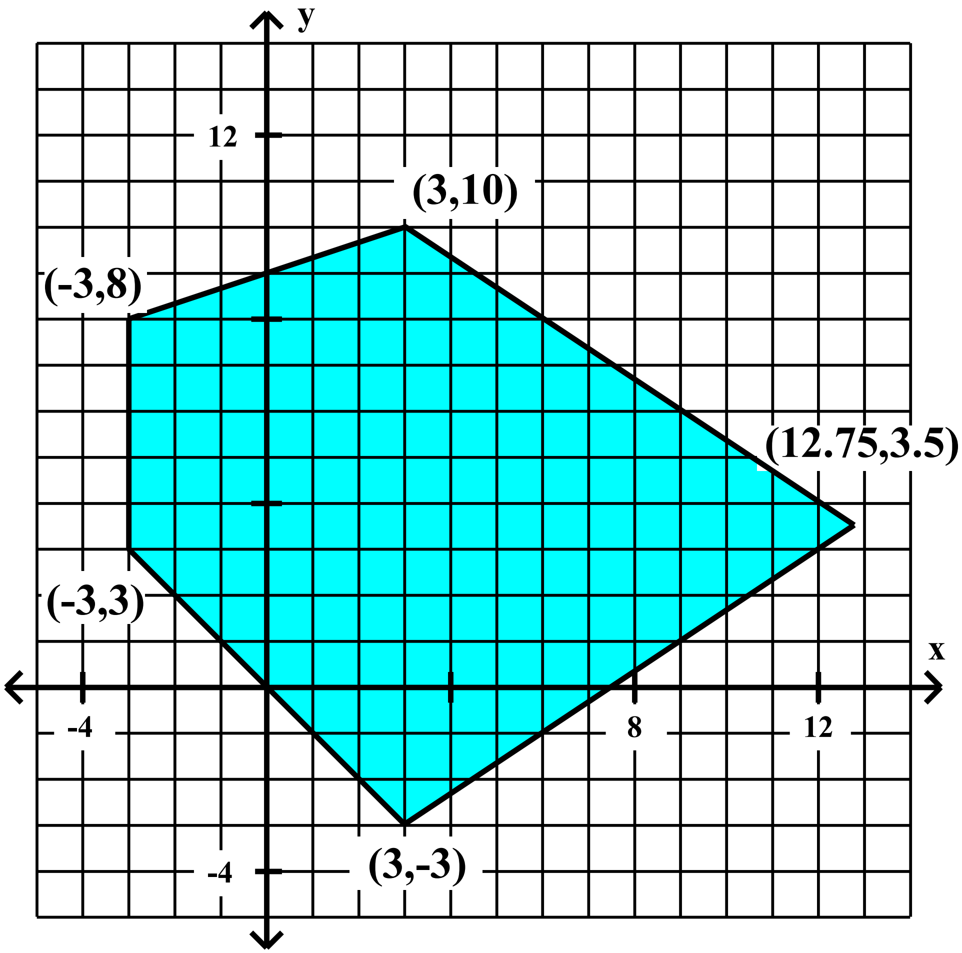

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6. $F = 3x - 5y$

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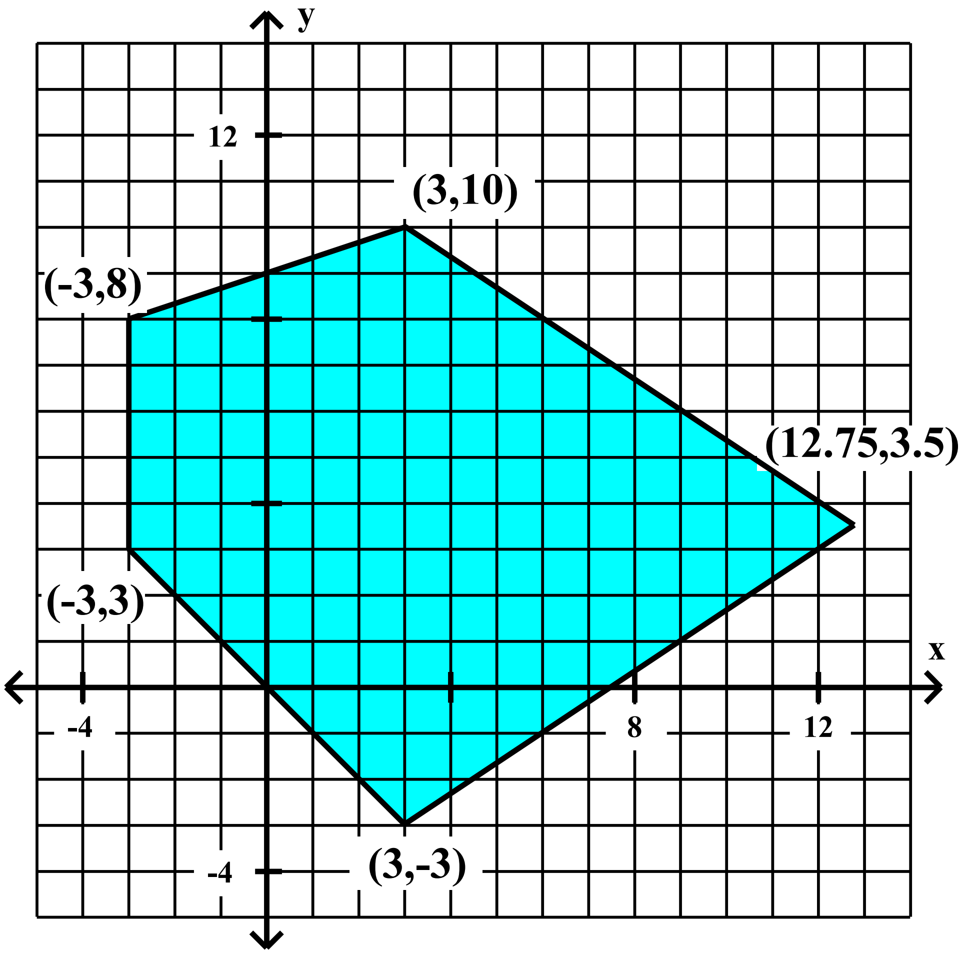
Algebra II Class Worksheet #4 Unit 4



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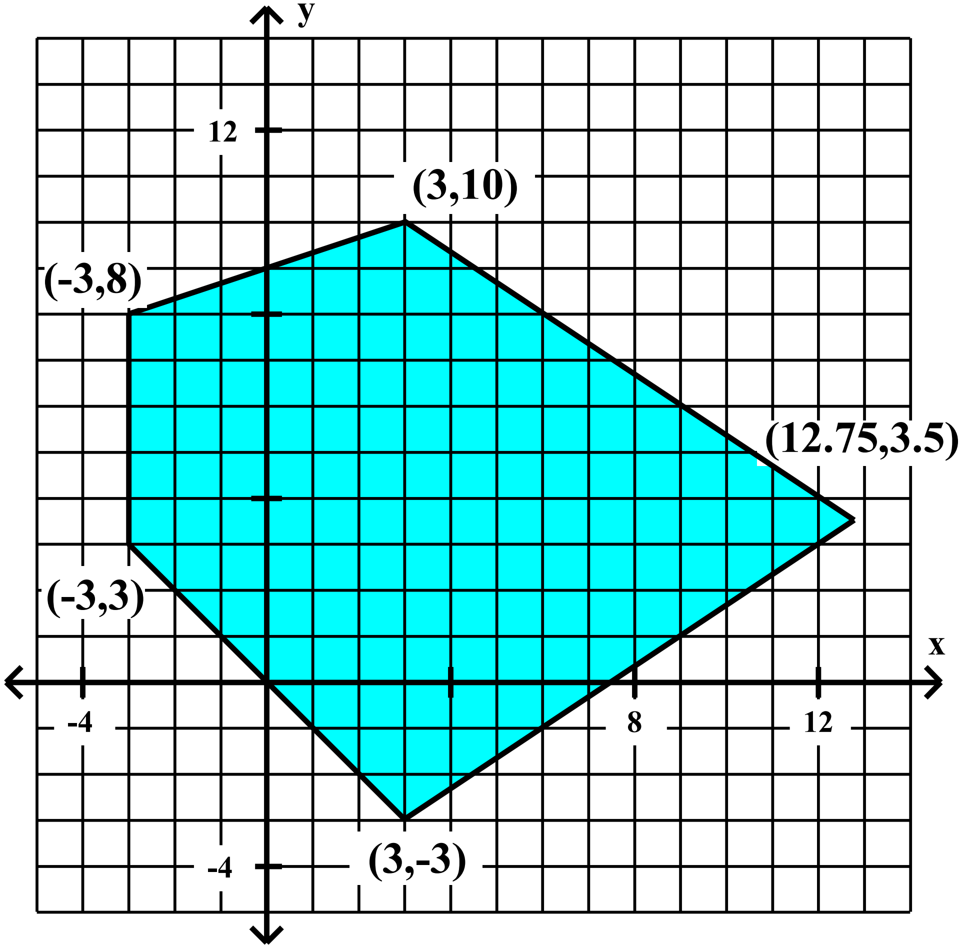

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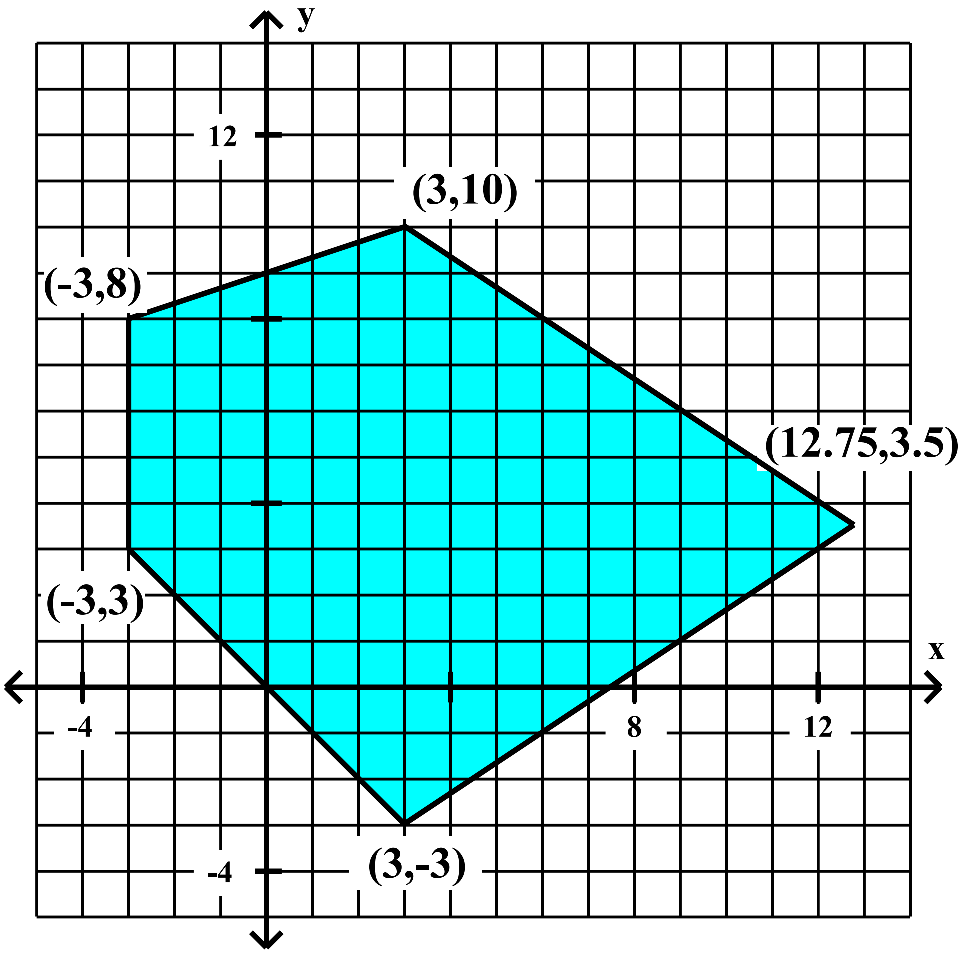
At (3,10)

Algebra II   Class Worksheet #4   Unit 4



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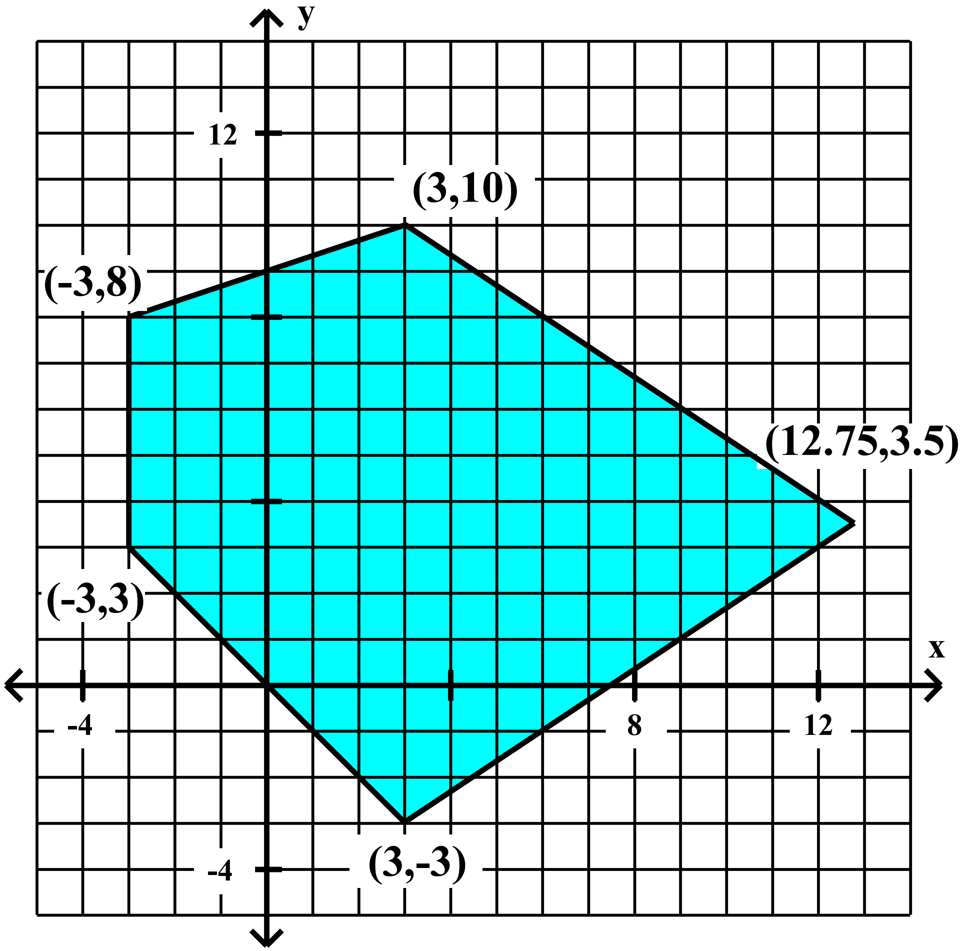
At (3,10) $\Rightarrow$ F =

Algebra II Class Worksheet #4 Unit 4



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6. $F = 3x - 5y$

F_{max} = ______ at ________

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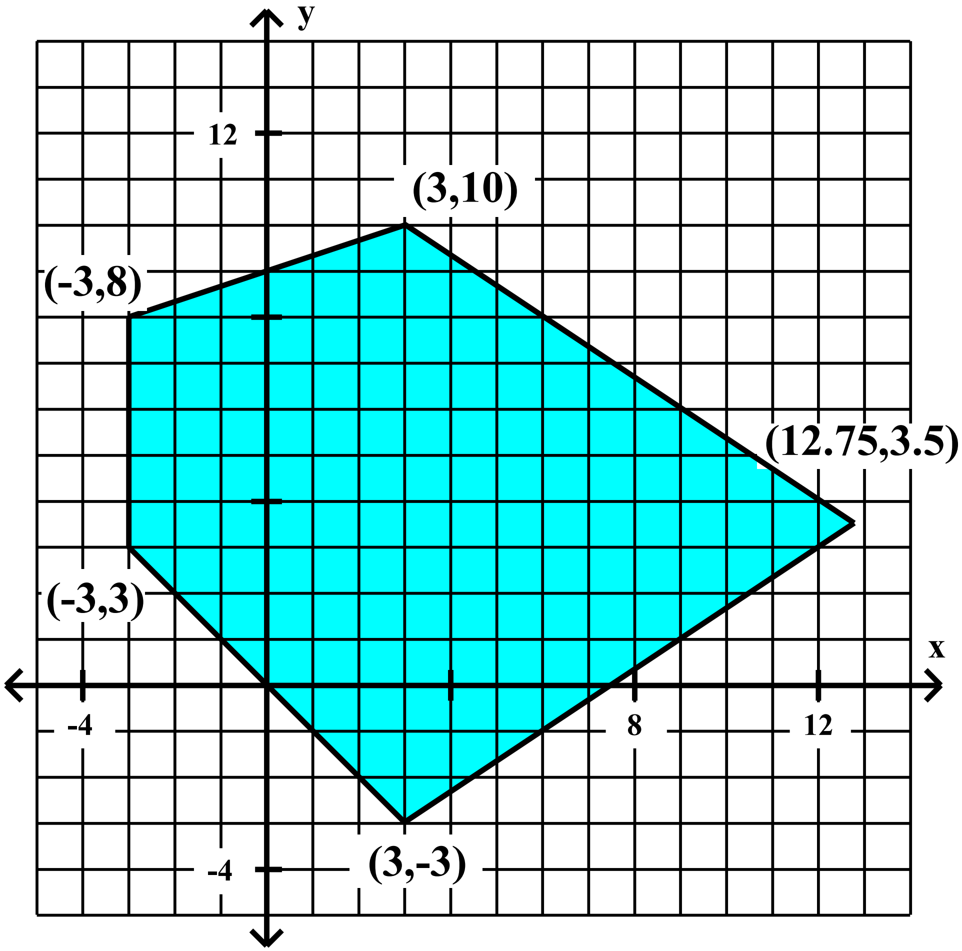
At (3,10) $\Rightarrow$ F = 9

Algebra II Class Worksheet #4 Unit 4



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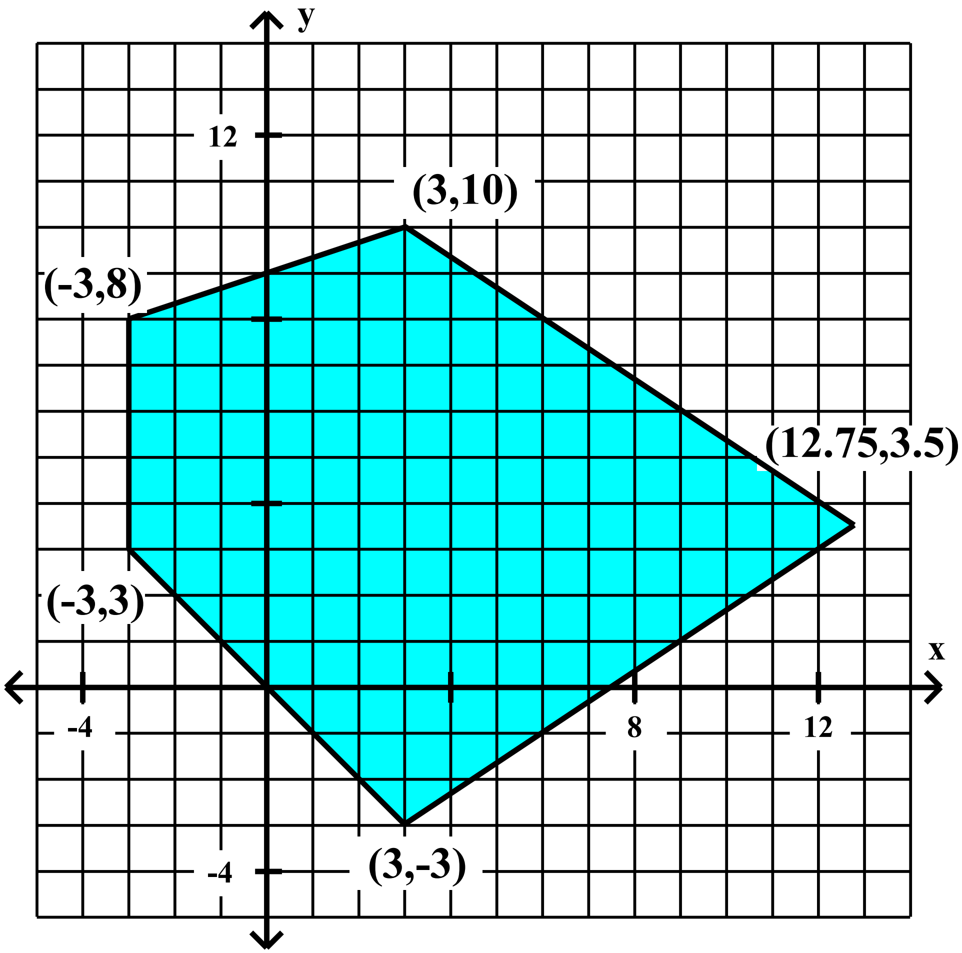
Algebra II   Class Worksheet #4   Unit 4



The **maximum** and the **minimum** values of F will occur at a vertex of the region.

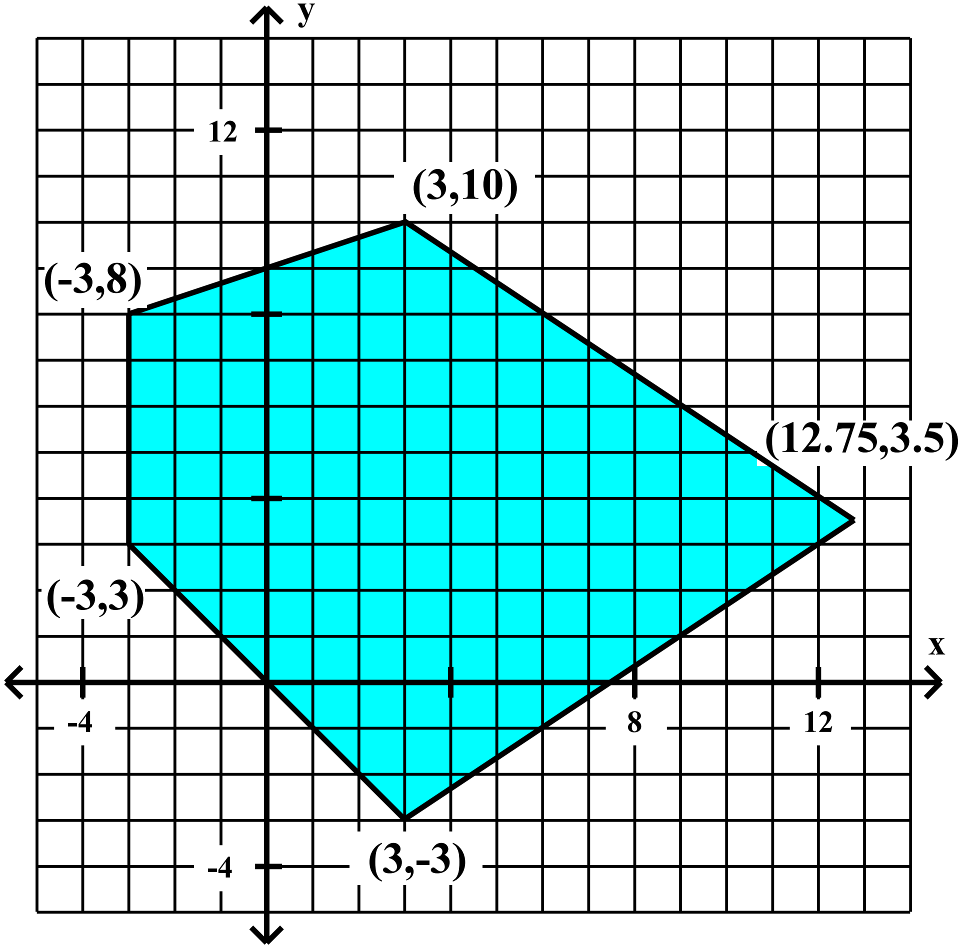
6. $F = 3x - 5y$

F_{max} = ______ at ________

F_{min} = ______ at ________

At (3,10) ⇨ $F = 9 - 50$

Algebra II   Class Worksheet #4   Unit 4



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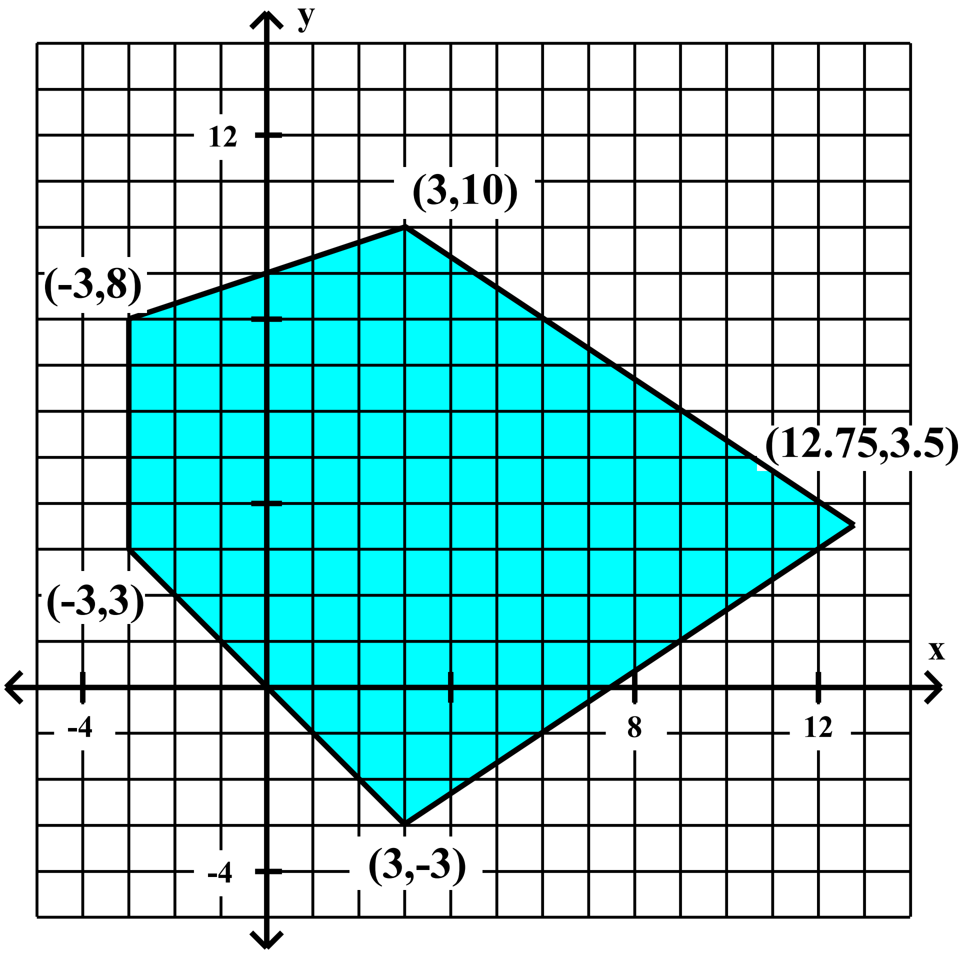
Algebra II Class Worksheet #4 Unit 4



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6. $F = 3x - 5y$

$F_{max} =$ ______ at ________

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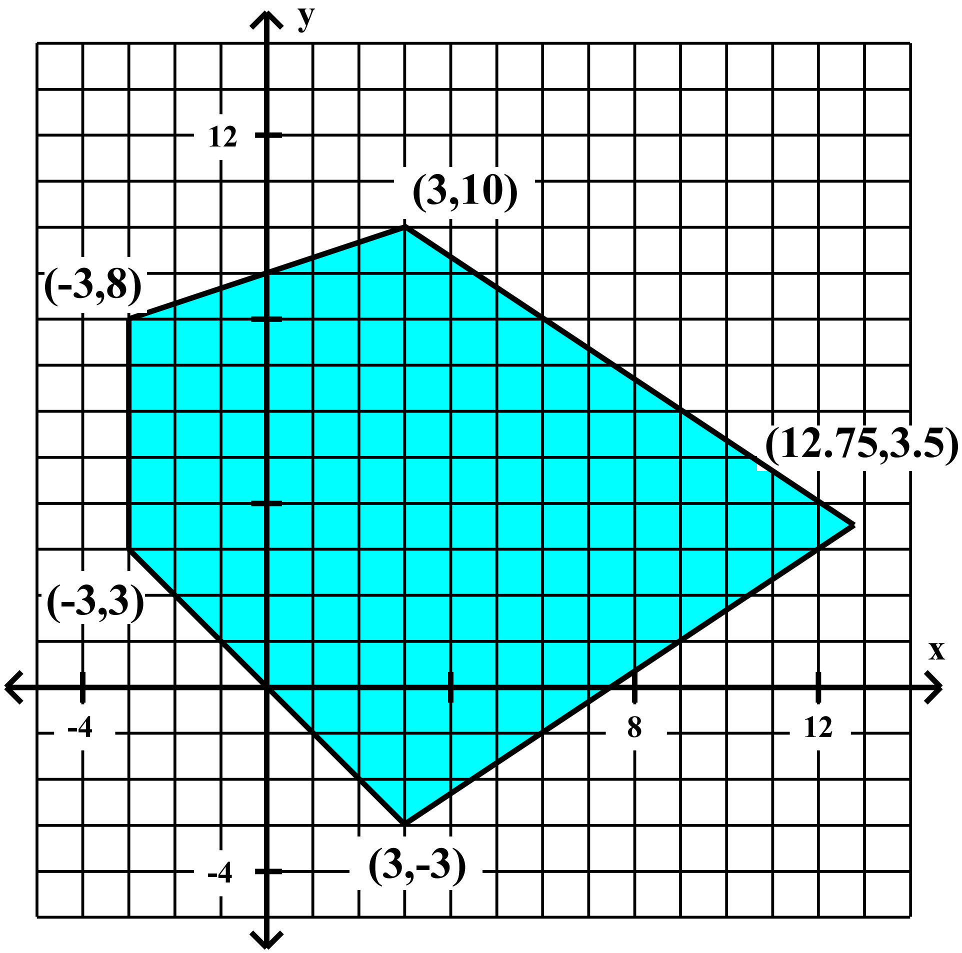
At (3,10) $\Rightarrow$ $F = 9 - 50 =$ **-41**

Algebra II Class Worksheet #4 Unit 4



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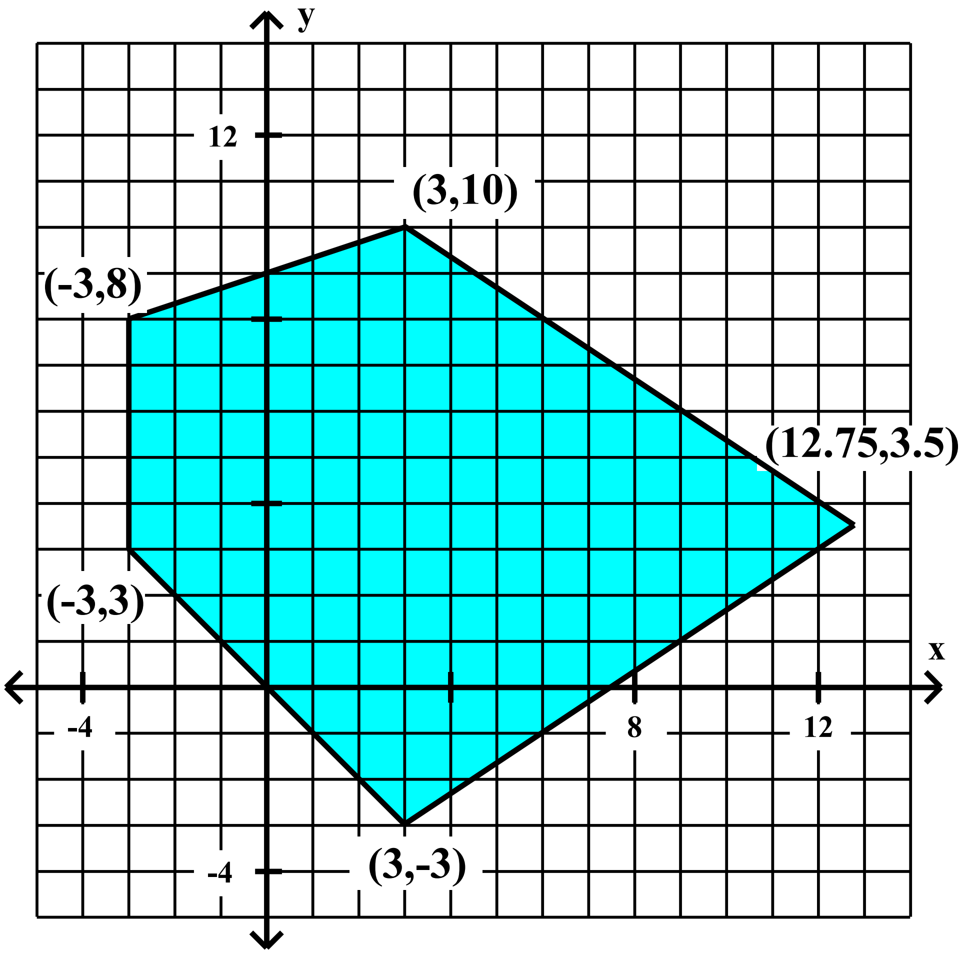
At (-3,8)

Algebra II   Class Worksheet #4   Unit 4



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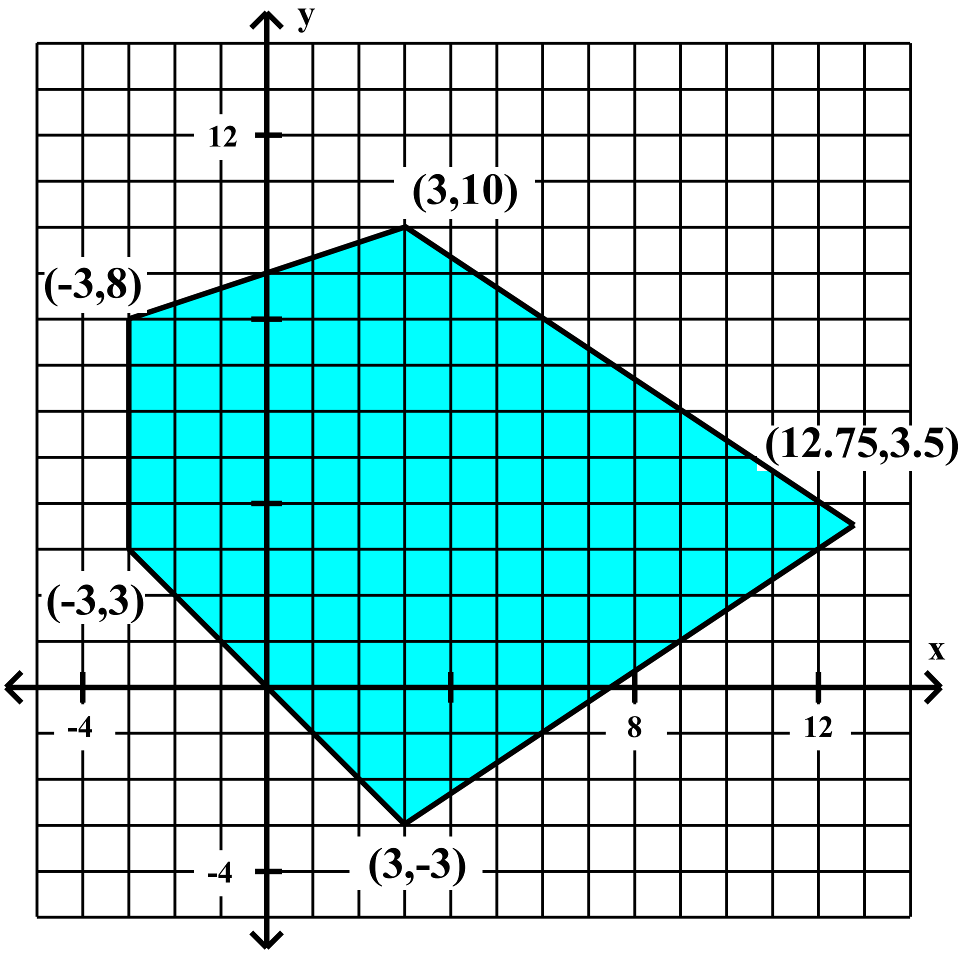
Algebra II Class Worksheet #4 Unit 4



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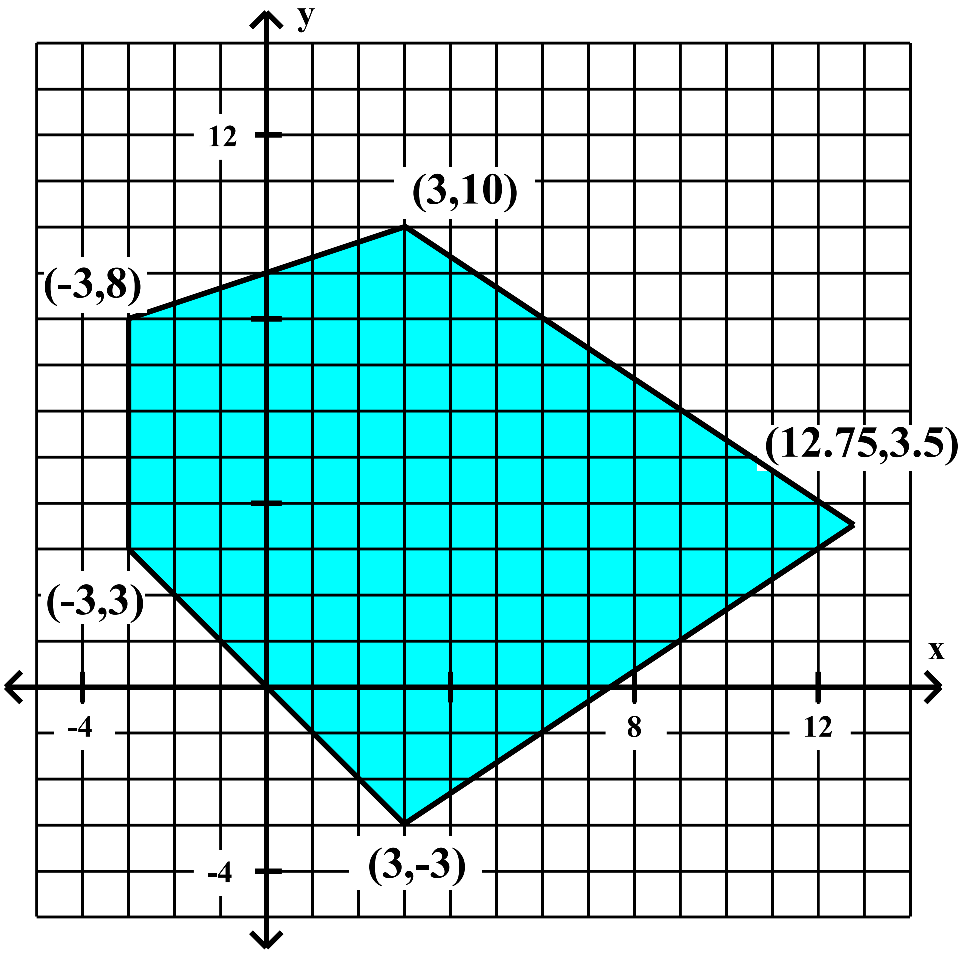
Algebra II   Class Worksheet #4   Unit 4



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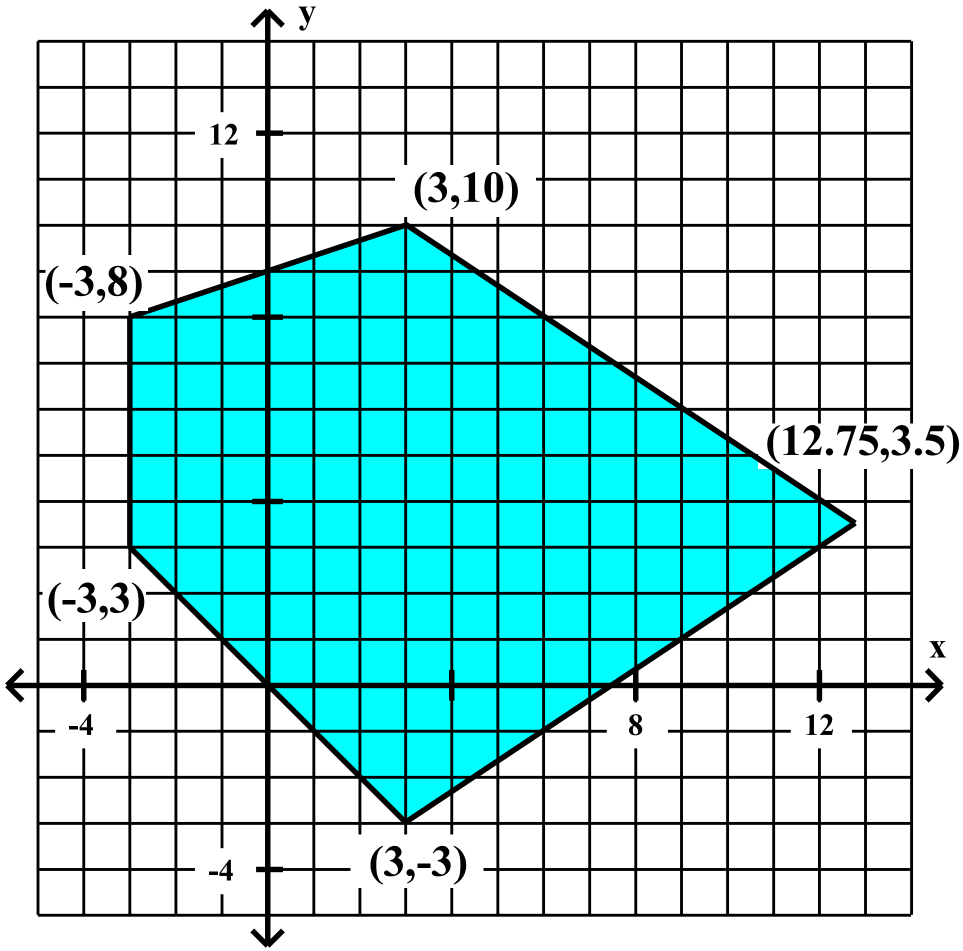
At (-3,8) ⇨ F = -9 –

Algebra II Class Worksheet #4 Unit 4



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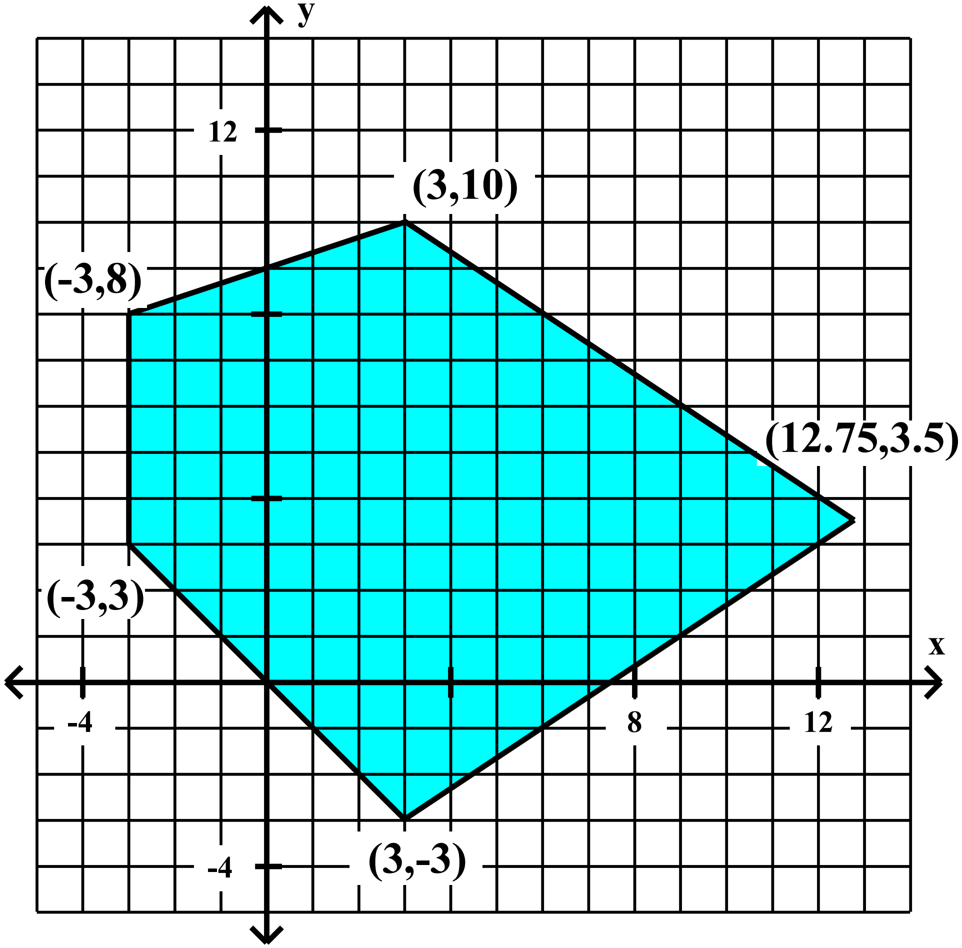
At (3,10) $\Rightarrow$ F = 9 – 50 = **-41**

At (-3,8) $\Rightarrow$ F = -9 – 40

Algebra II Class Worksheet #4 Unit 4



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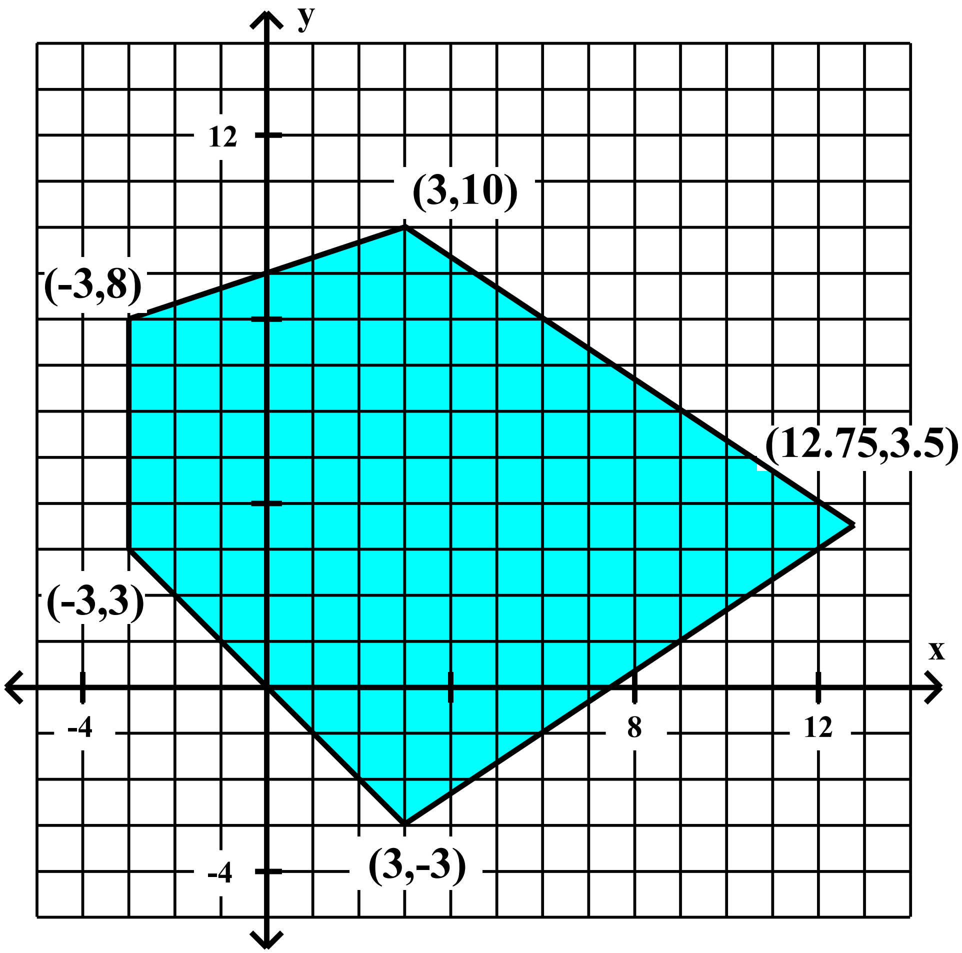
At (-3,8) ⇨ $F = -9 - 40 =$

Algebra II Class Worksheet #4 Unit 4



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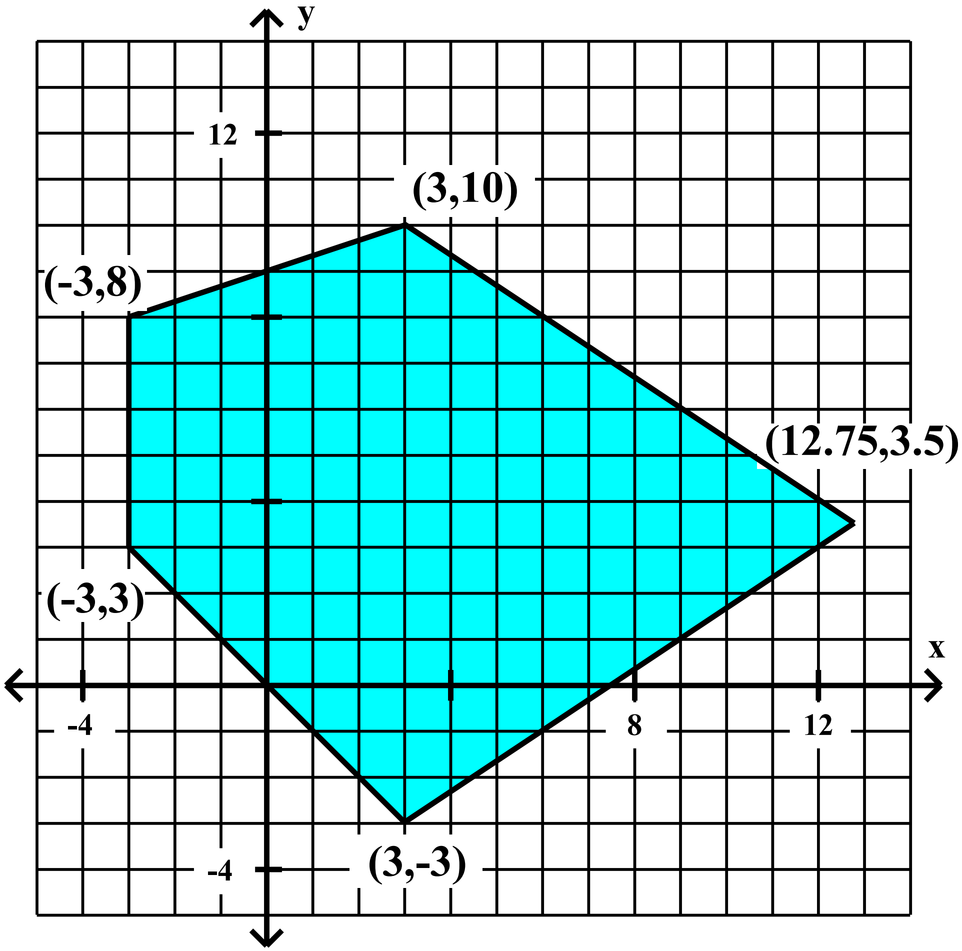
At (-3,8) ⇨ F = -9 – 40 = **-49**

Algebra II Class Worksheet #4 Unit 4



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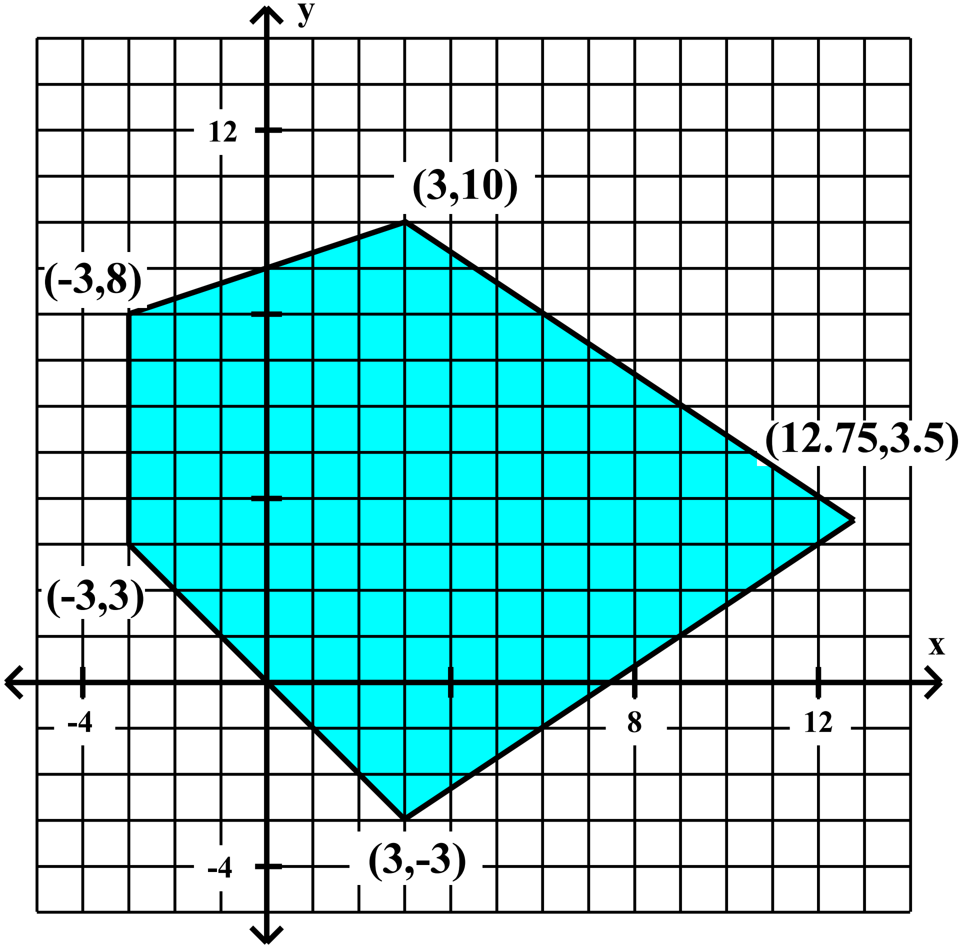
At (-3,8) ⇨ $F = -9 - 40 = \mathbf{-49}$

At (-3,3)

Algebra II Class Worksheet #4 Unit 4



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At (-3,3) ⟹ F =

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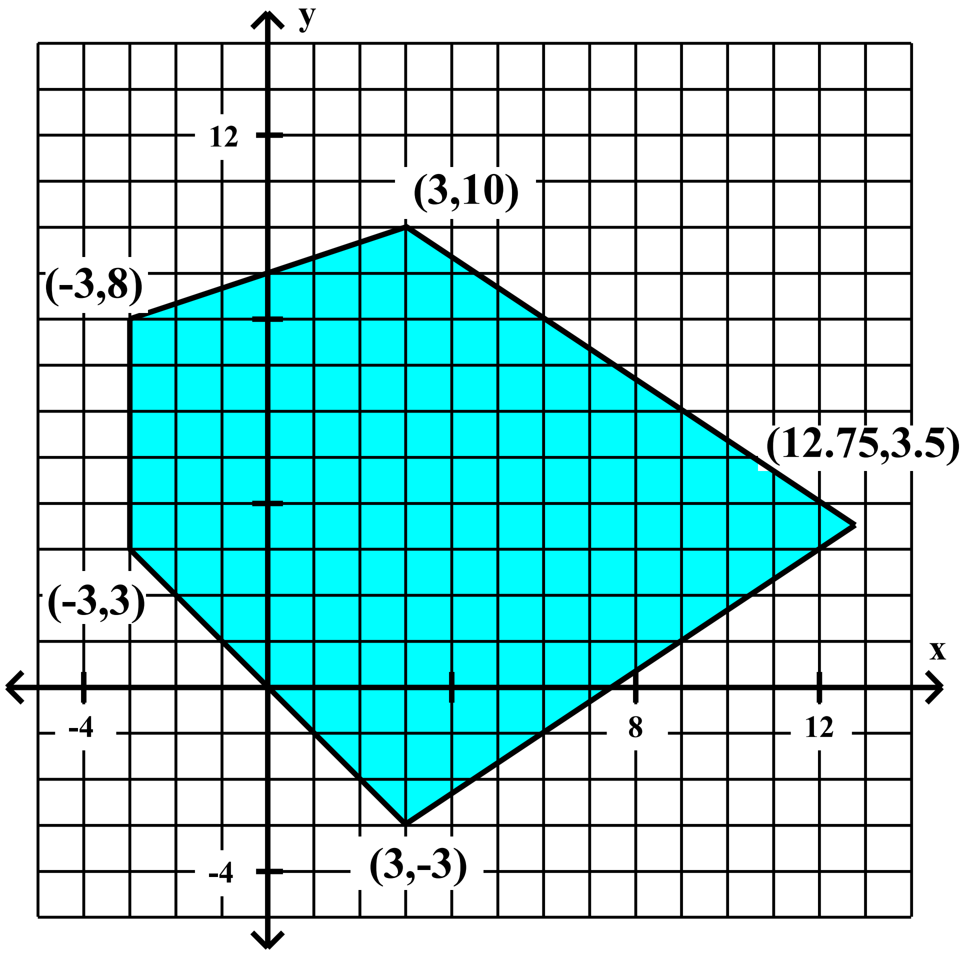

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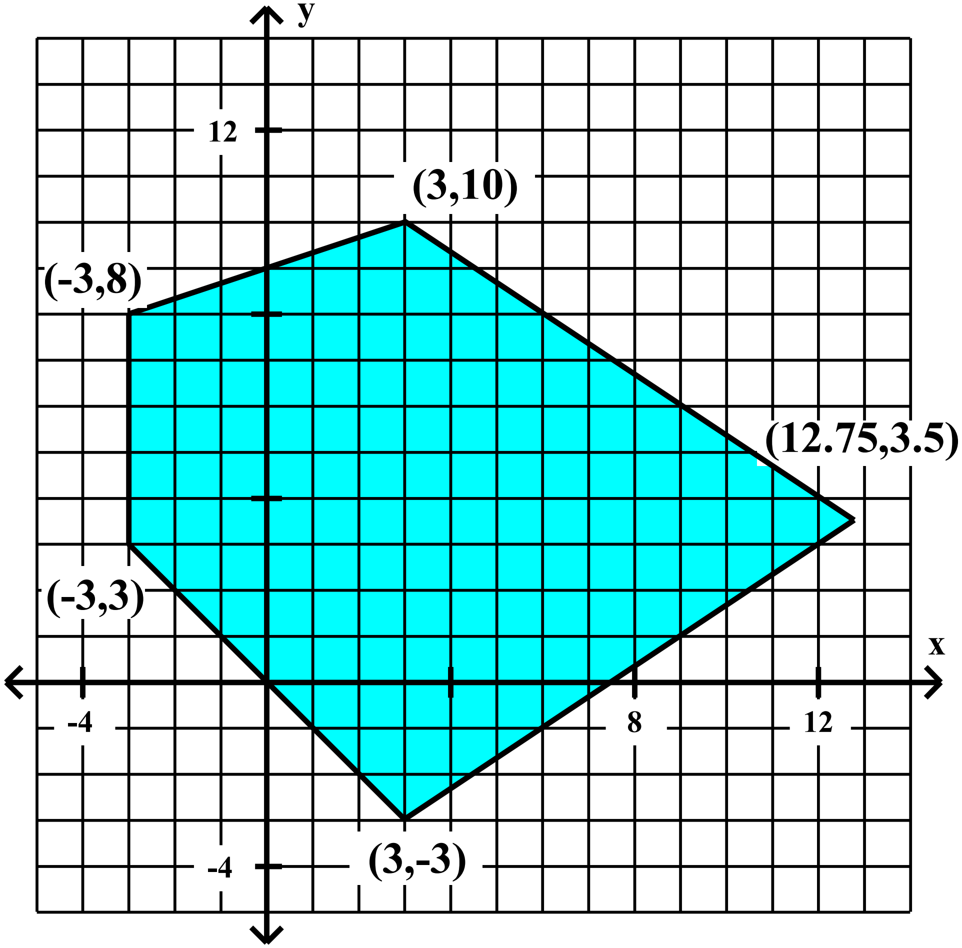
Algebra II Class Worksheet #4 Unit 4



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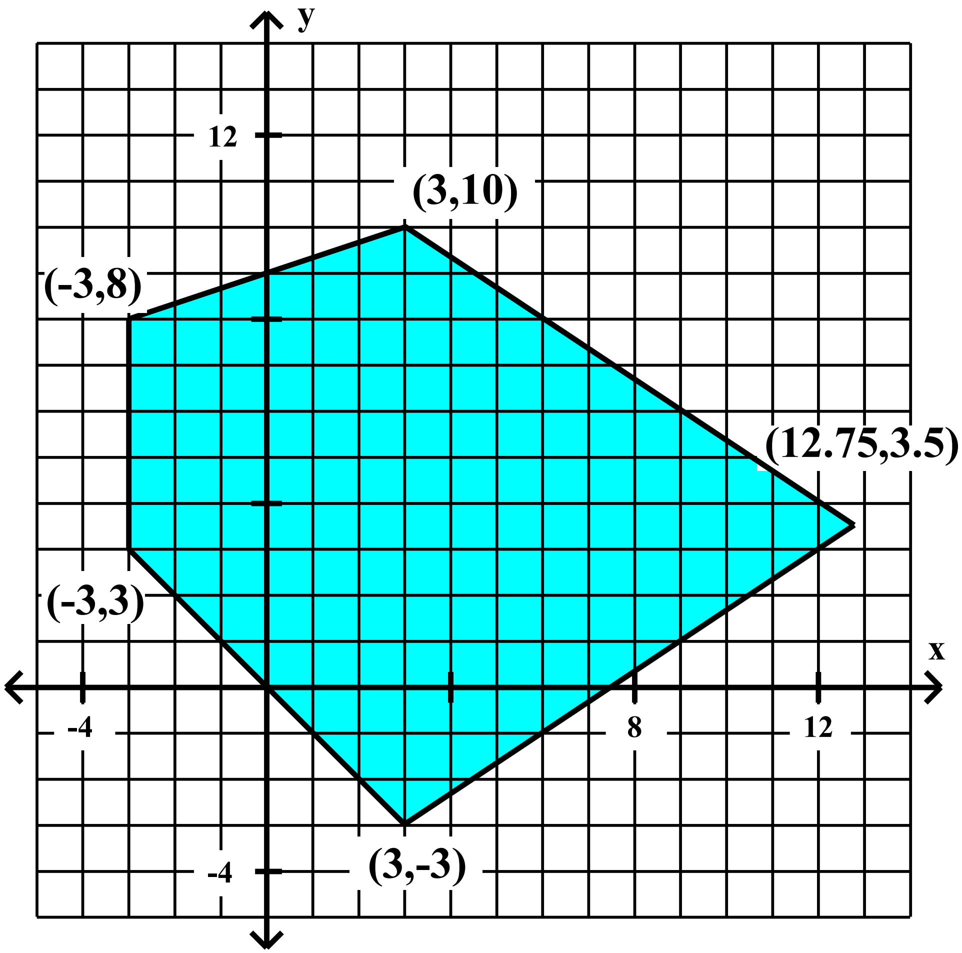
Algebra II   Class Worksheet #4   Unit 4



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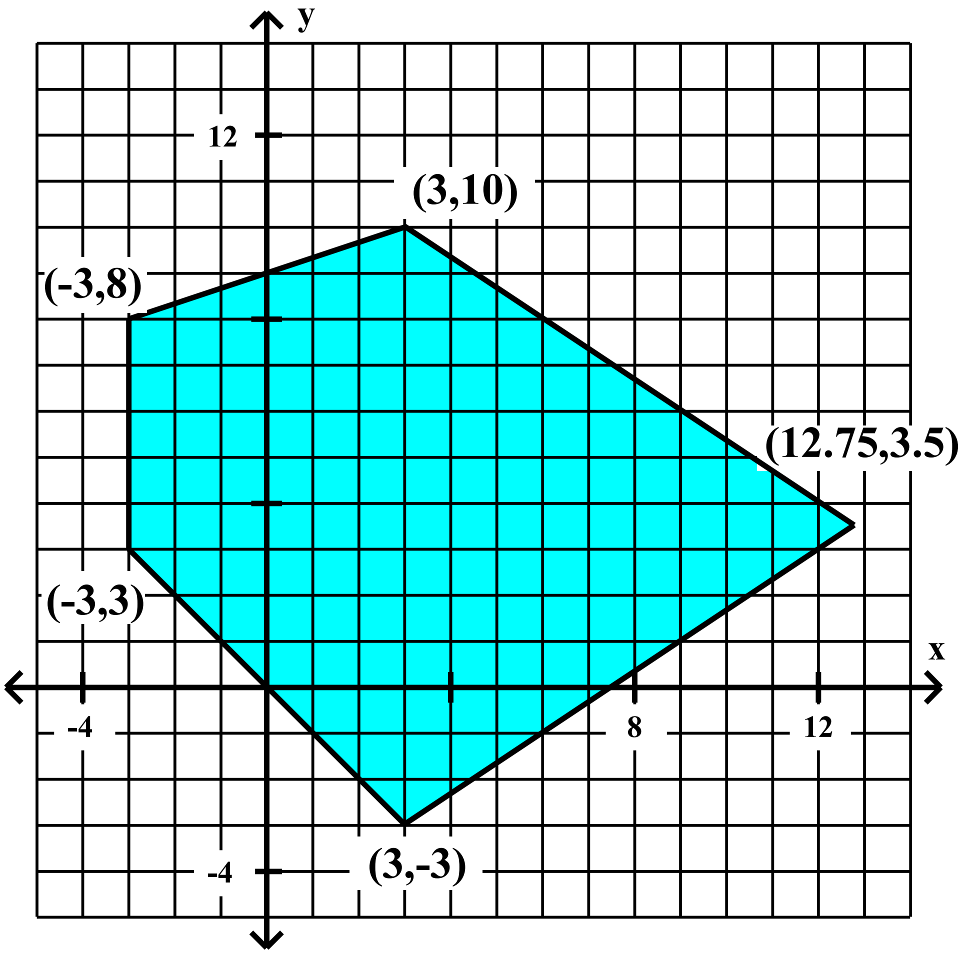
Algebra II Class Worksheet #4 Unit 4



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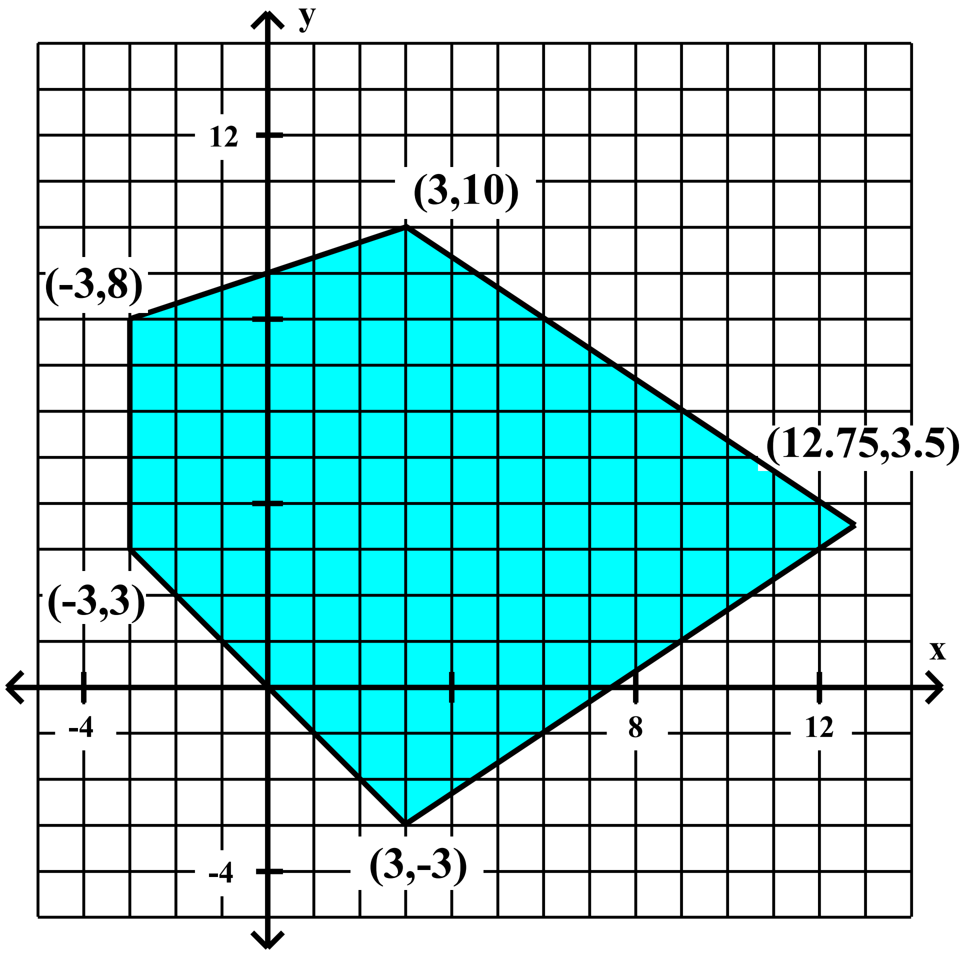
Algebra II Class Worksheet #4 Unit 4



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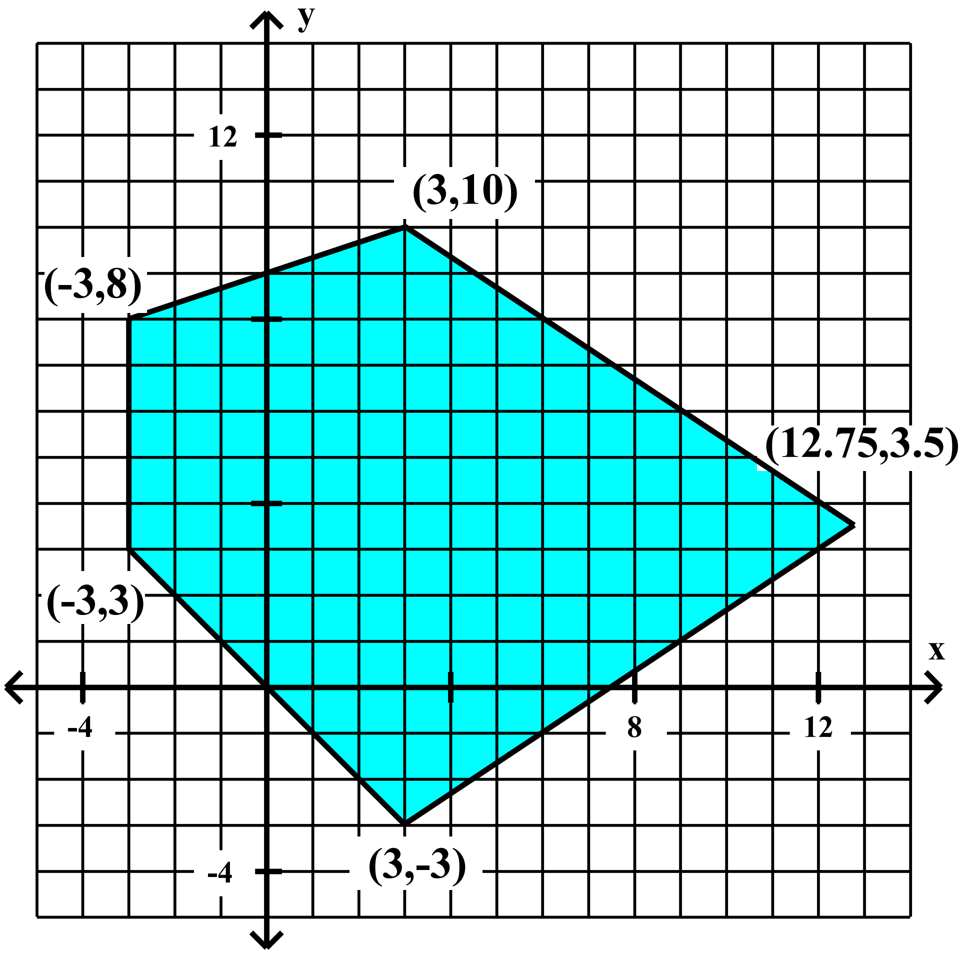

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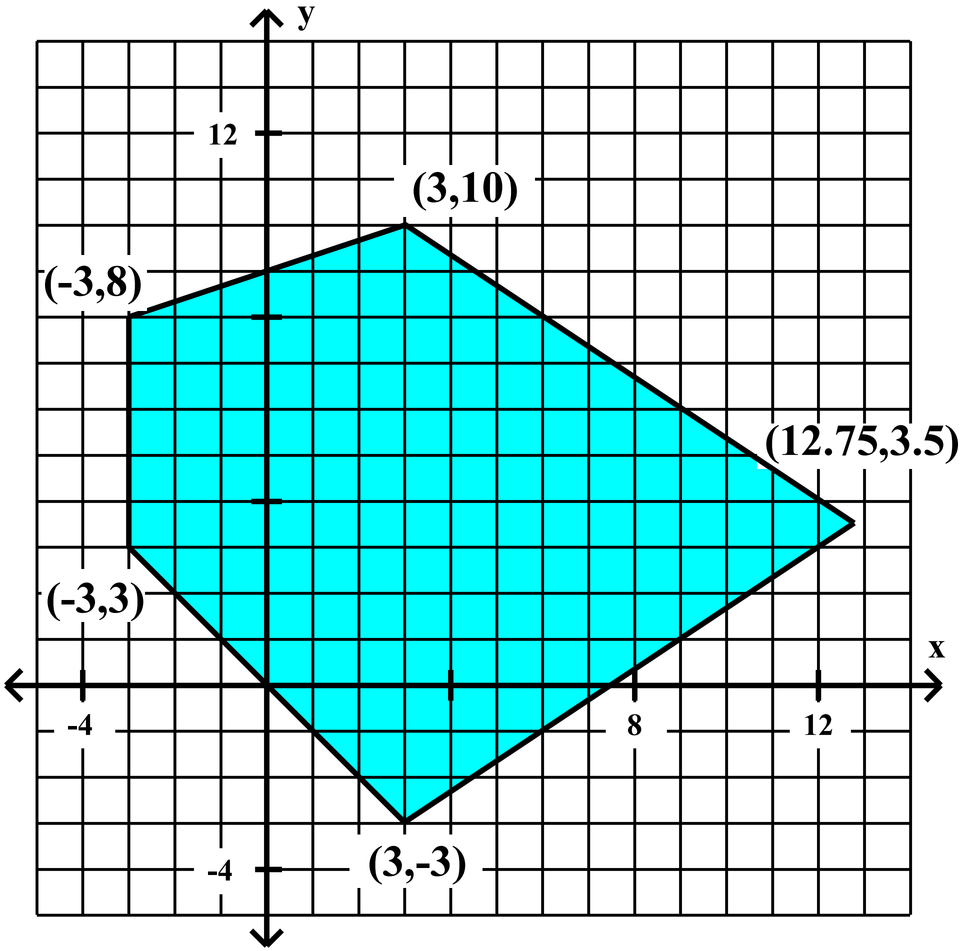
Algebra II Class Worksheet #4 Unit 4



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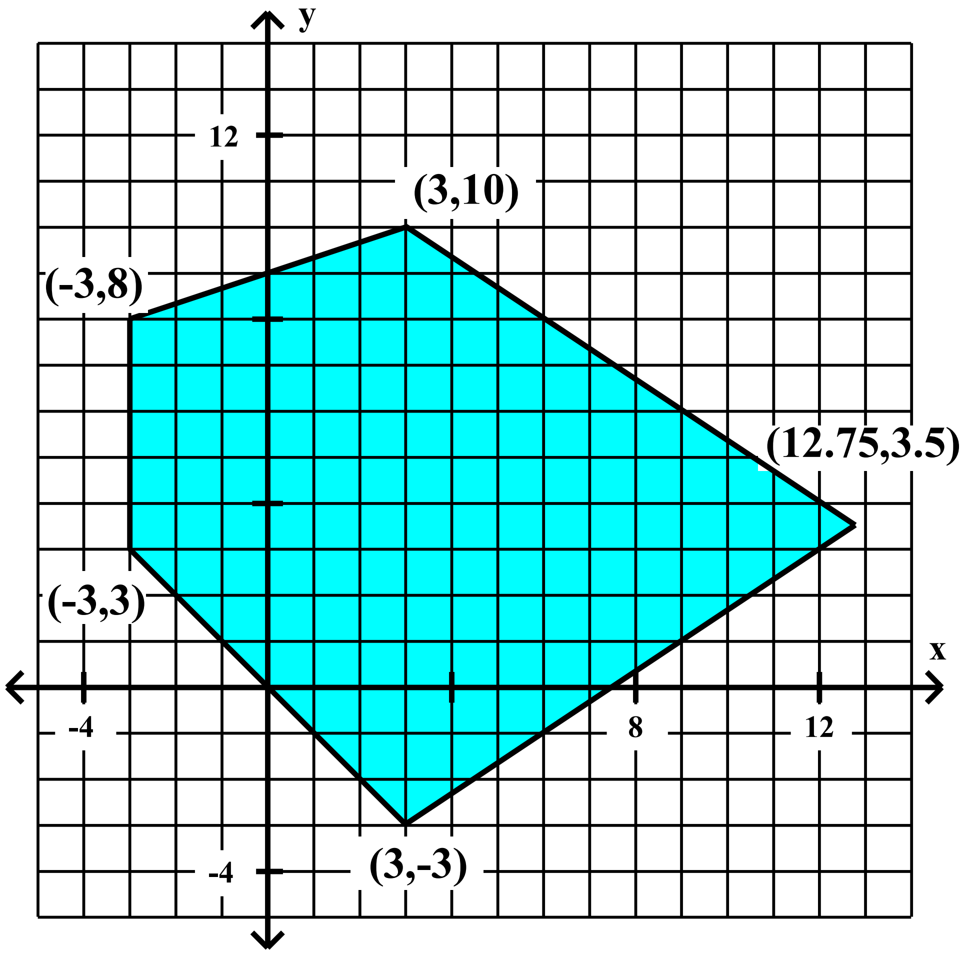
Algebra II Class Worksheet #4 Unit 4



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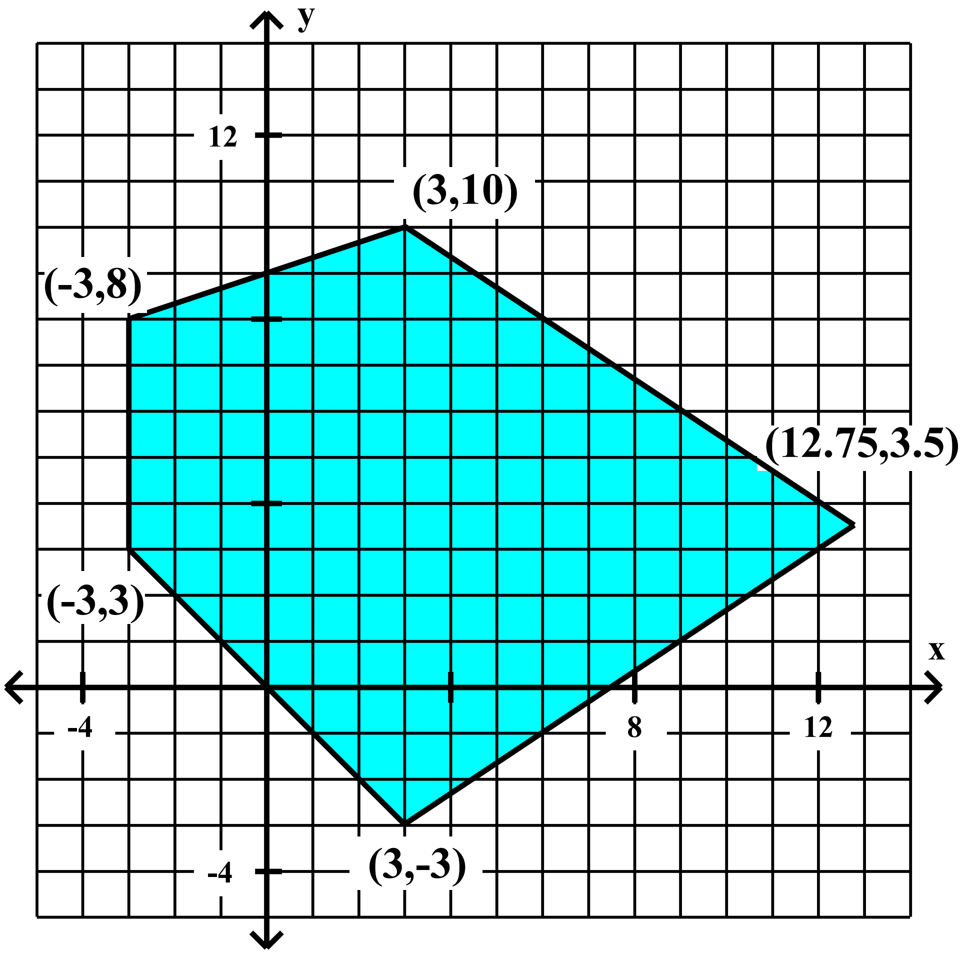

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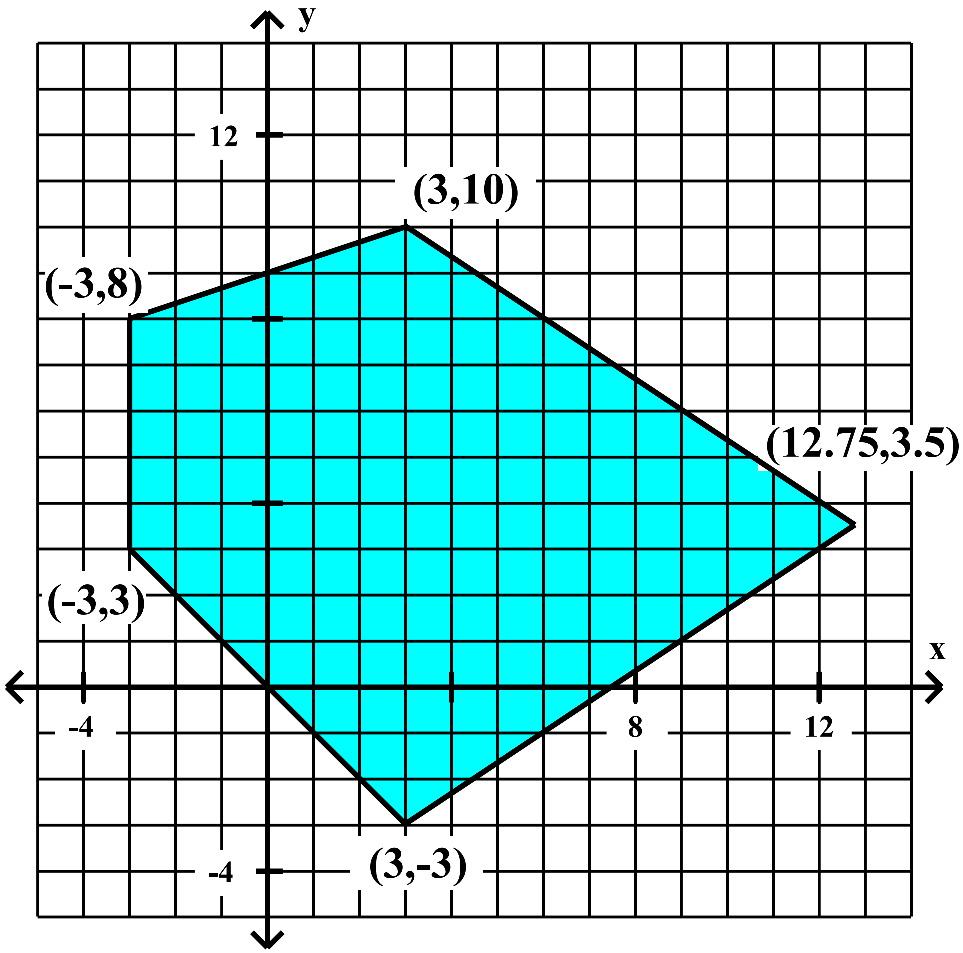
Algebra II Class Worksheet #4 Unit 4



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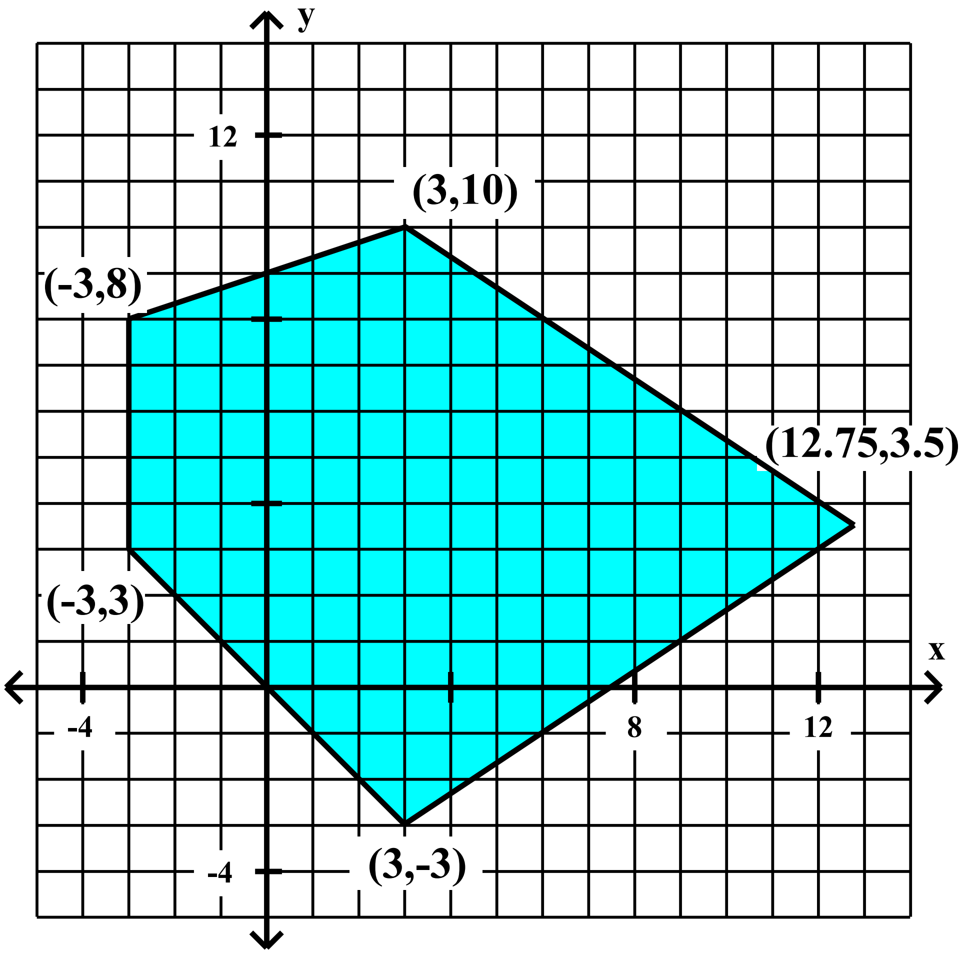
Algebra II Class Worksheet #4 Unit 4



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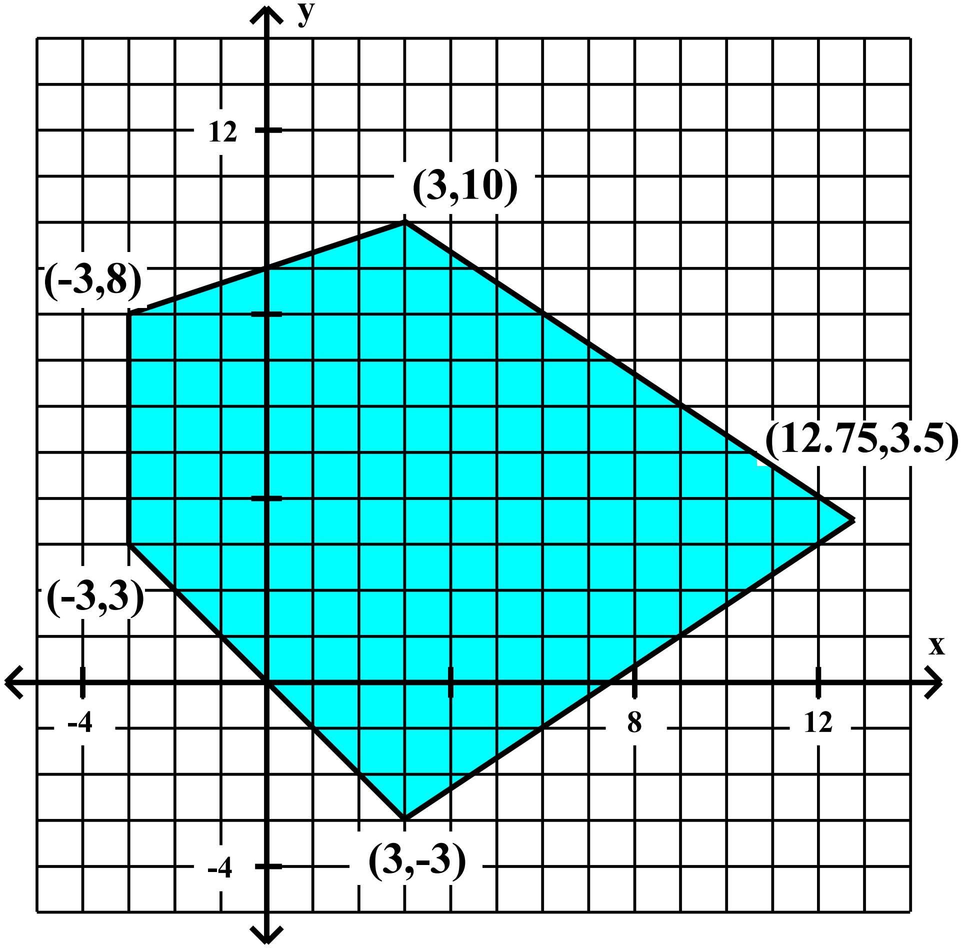
Algebra II Class Worksheet #4 Unit 4



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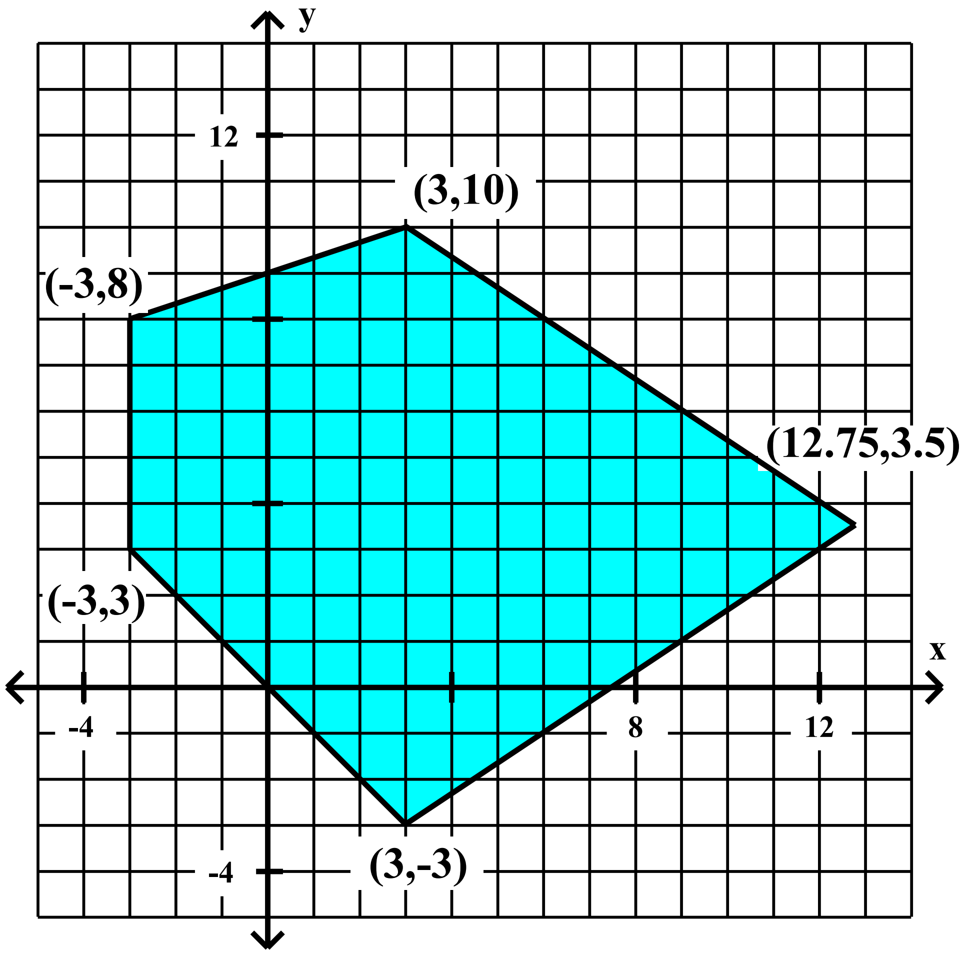
Algebra II Class Worksheet #4 Unit 4



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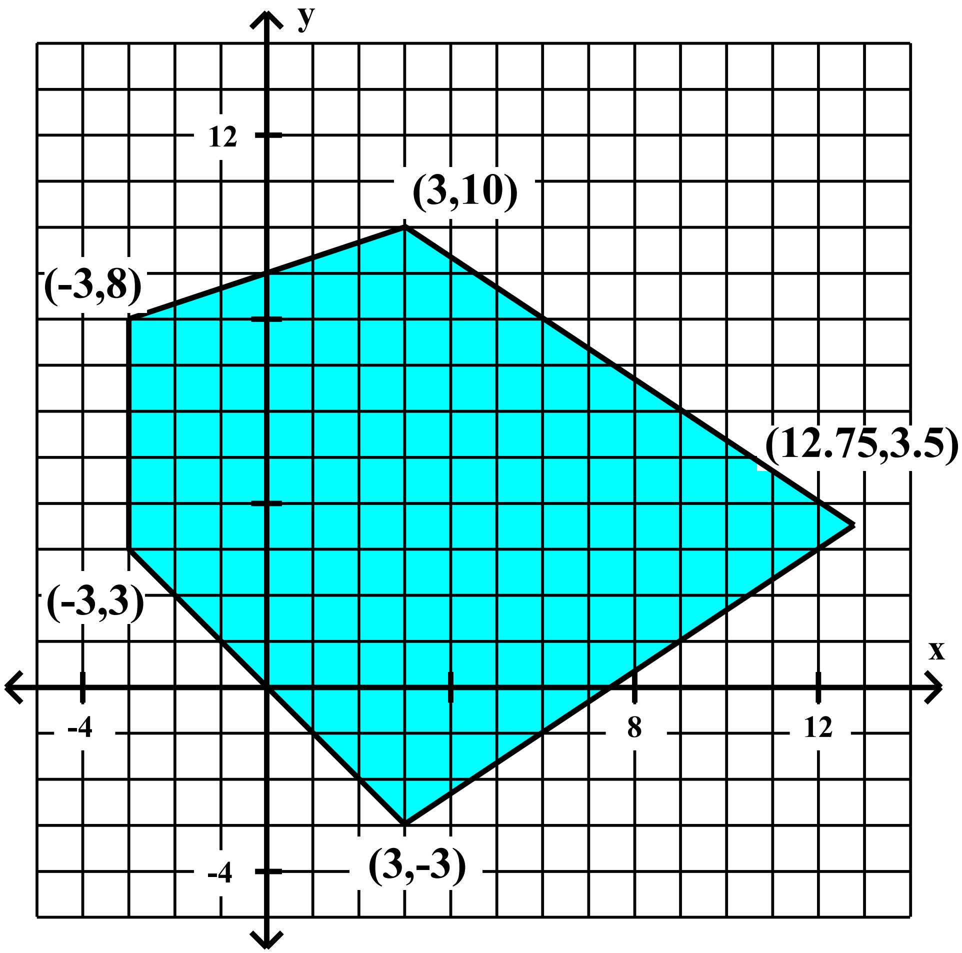
At (12.75,3.5)

Algebra II   Class Worksheet #4   Unit 4



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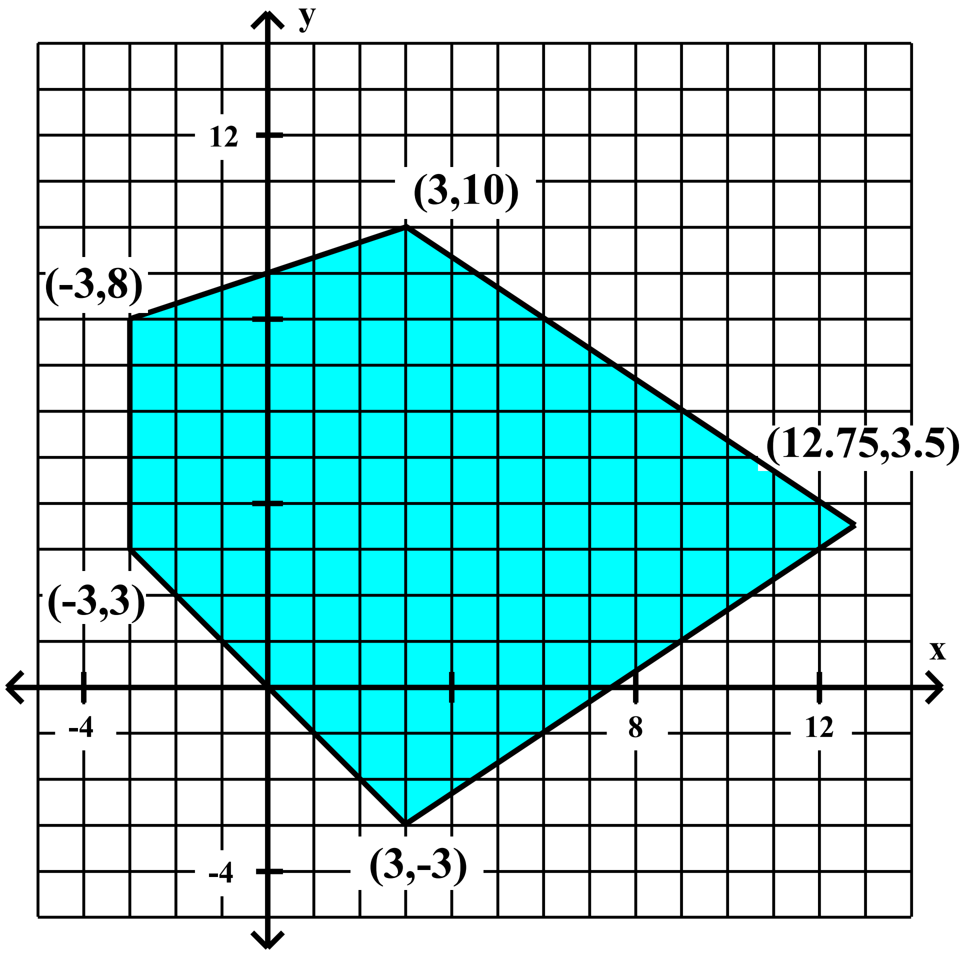

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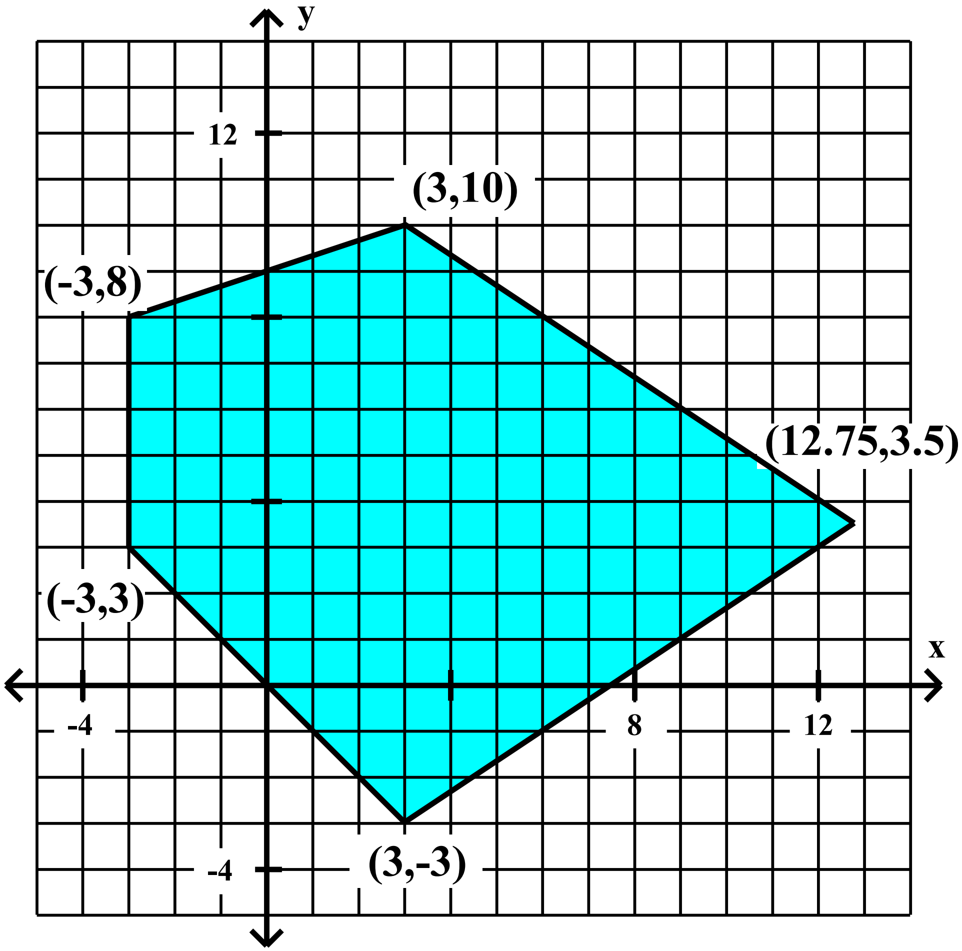
Algebra II Class Worksheet #4 Unit 4



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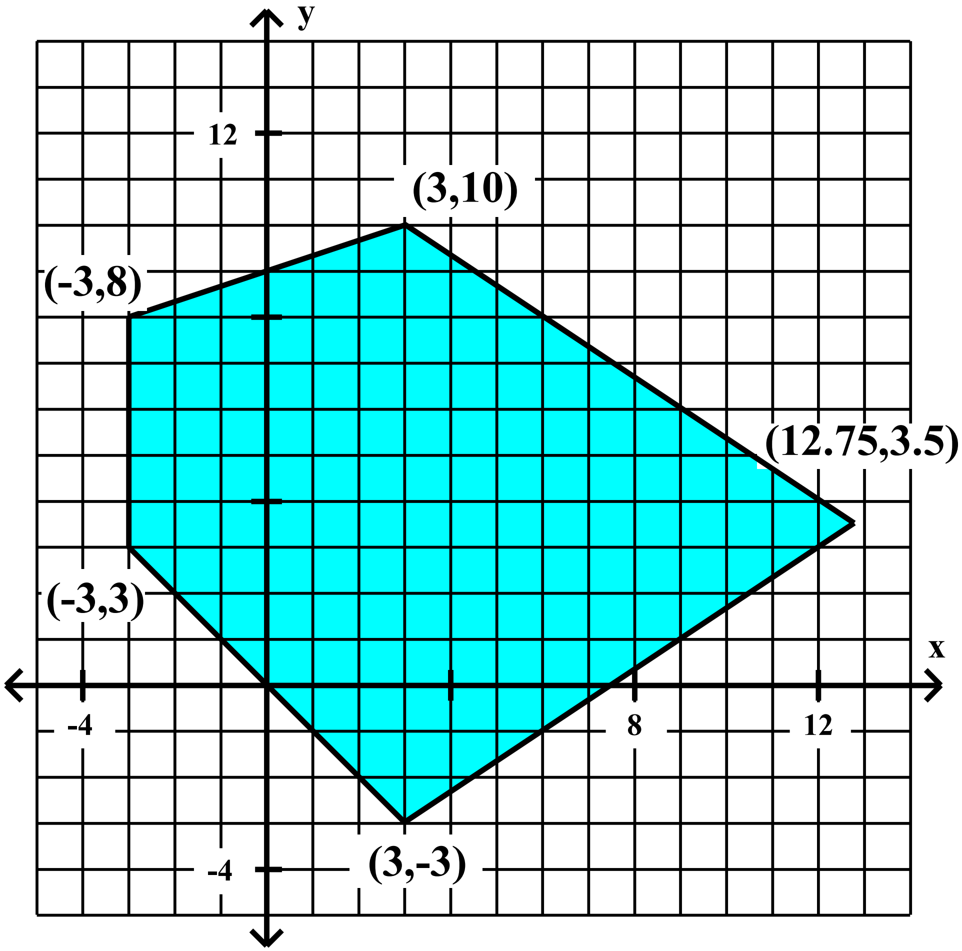
Algebra II Class Worksheet #4 Unit 4



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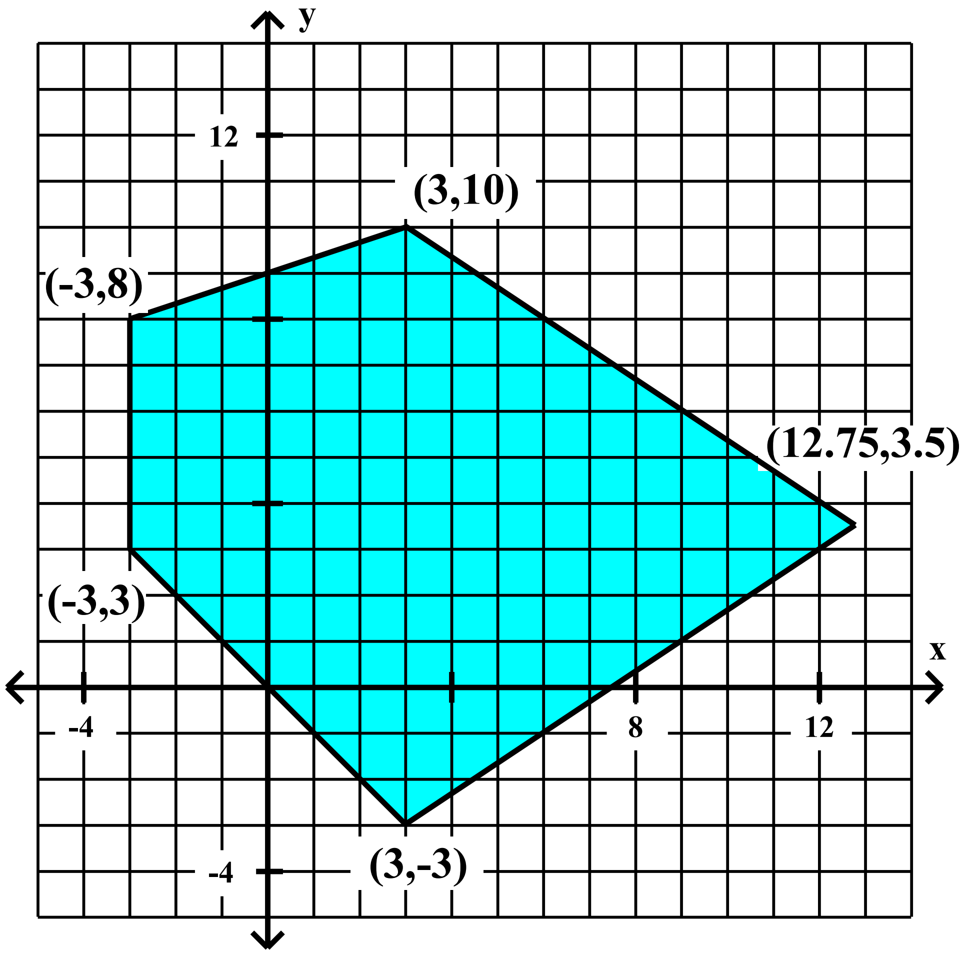
Algebra II Class Worksheet #4 Unit 4



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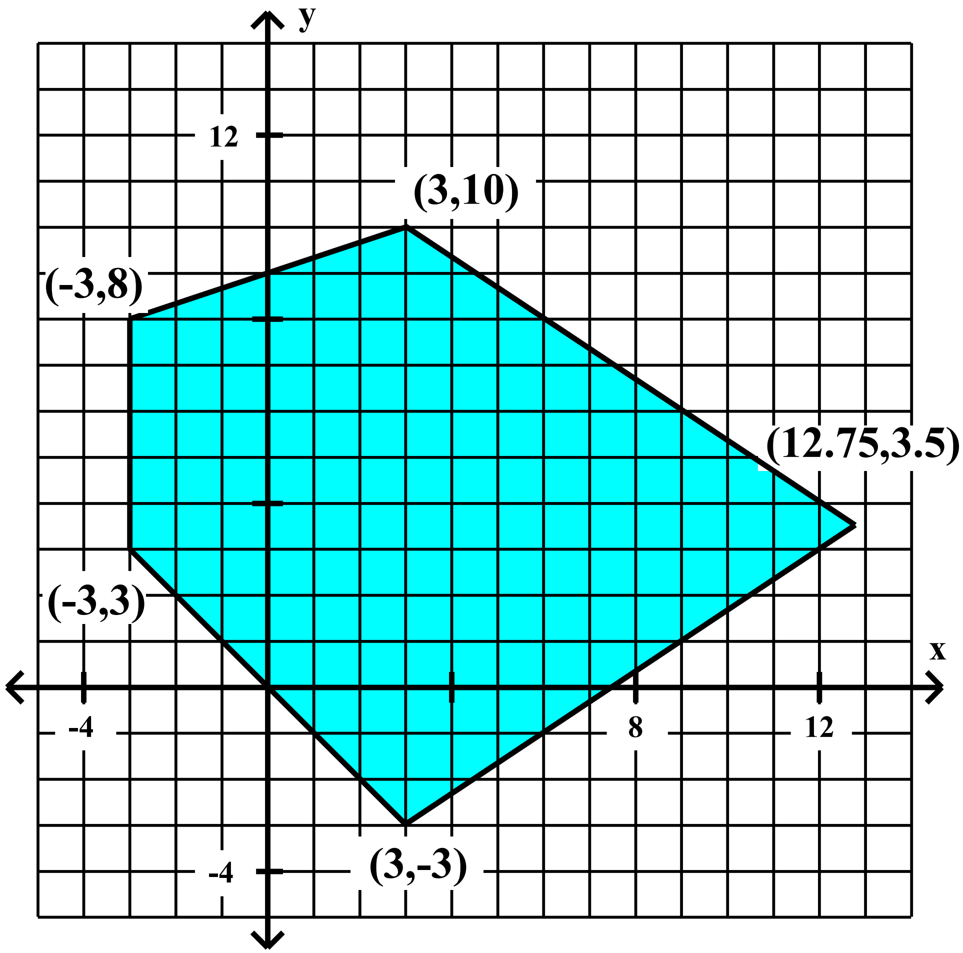

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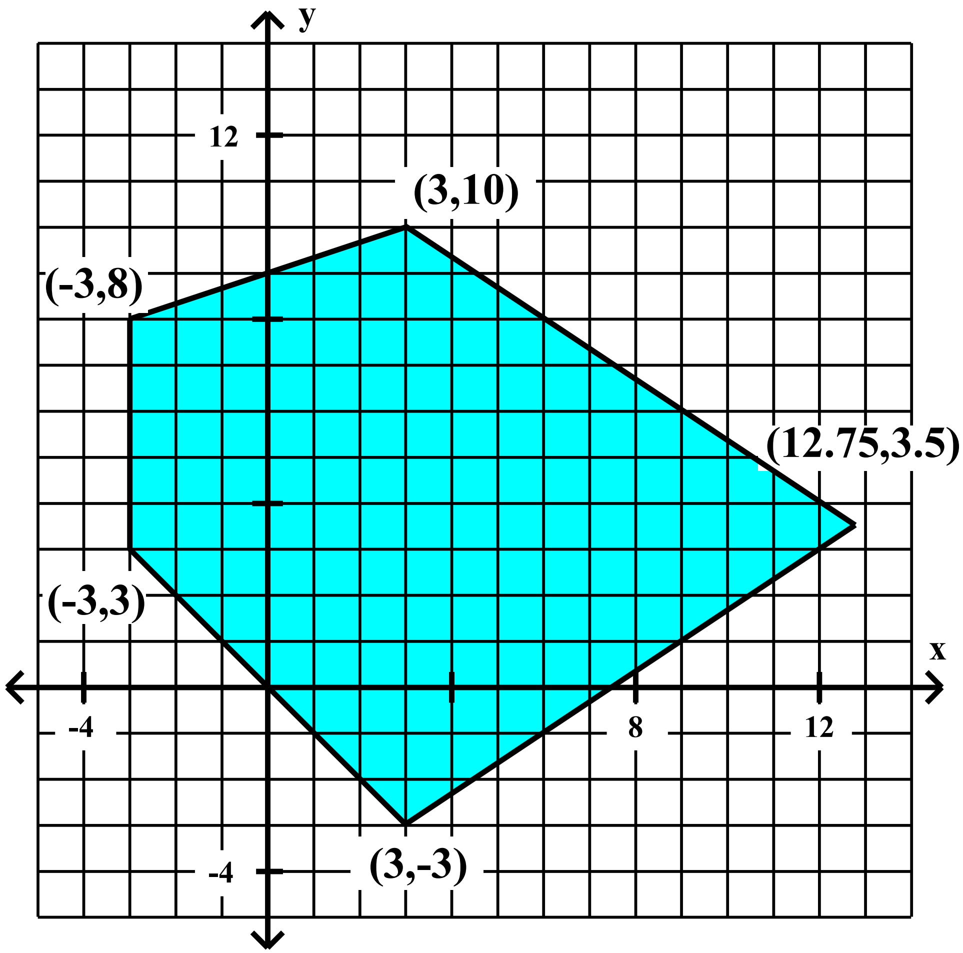
Algebra II   Class Worksheet #4   Unit 4



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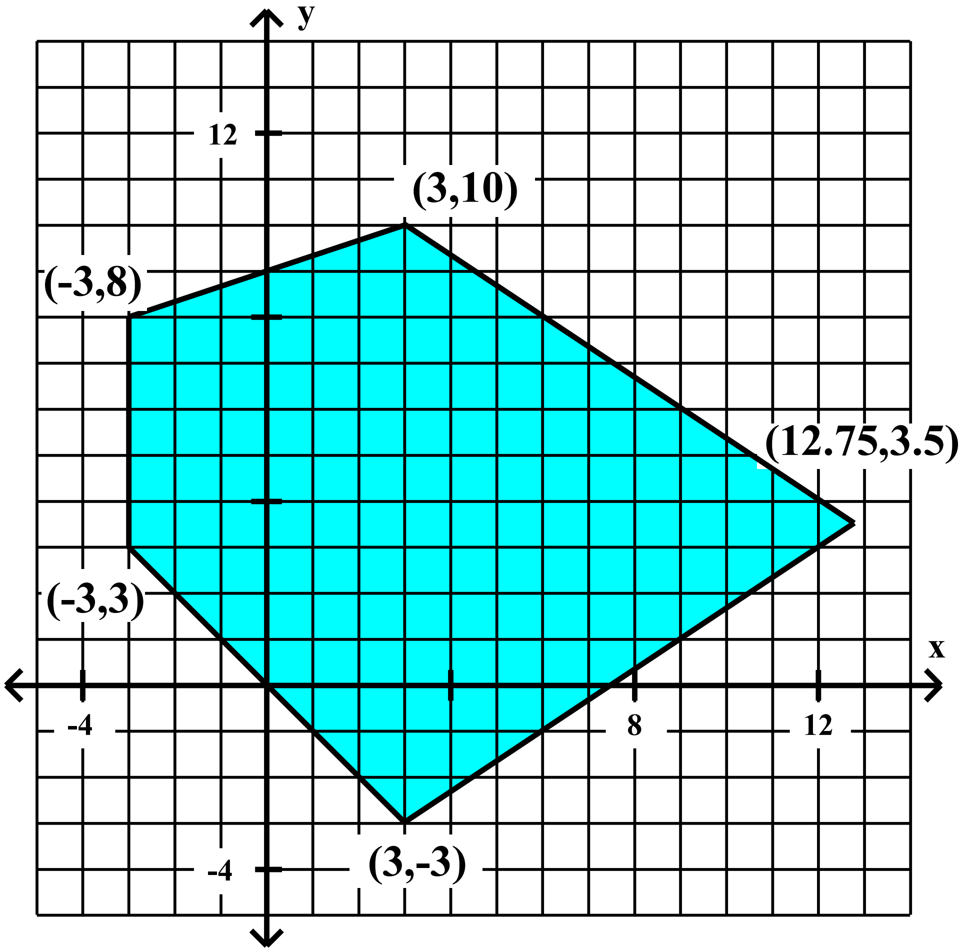

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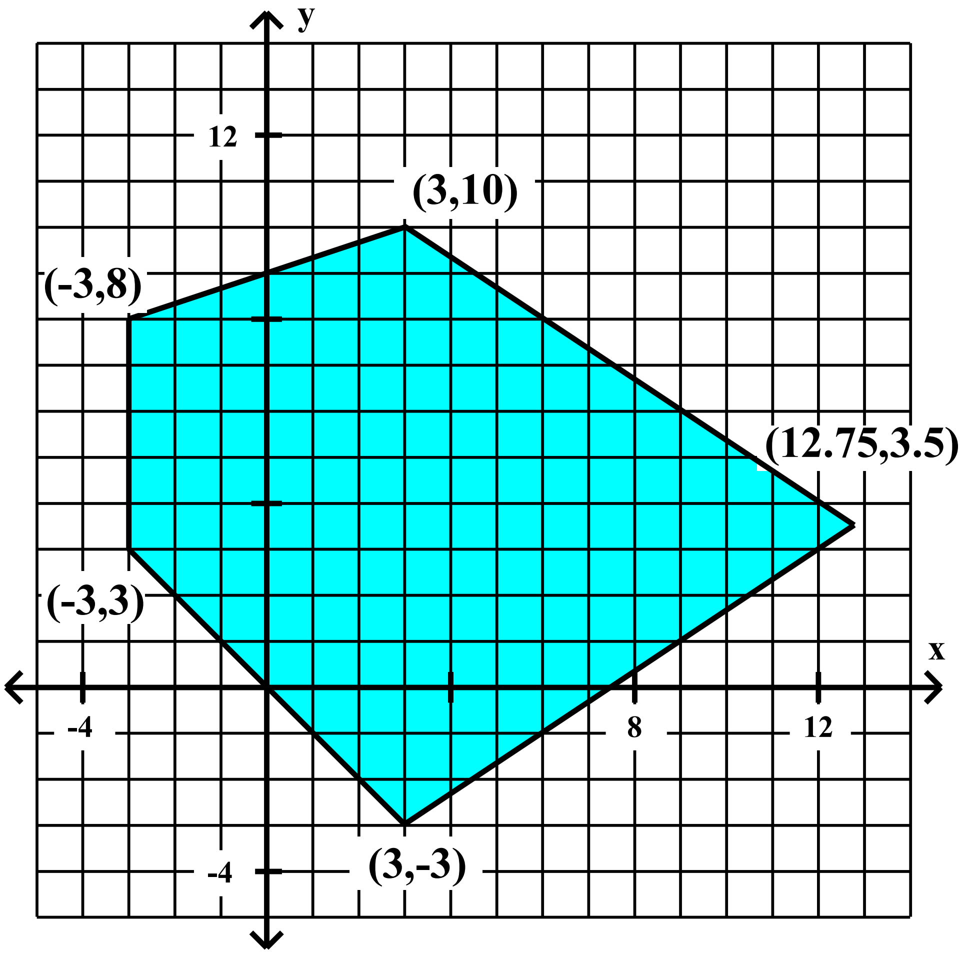

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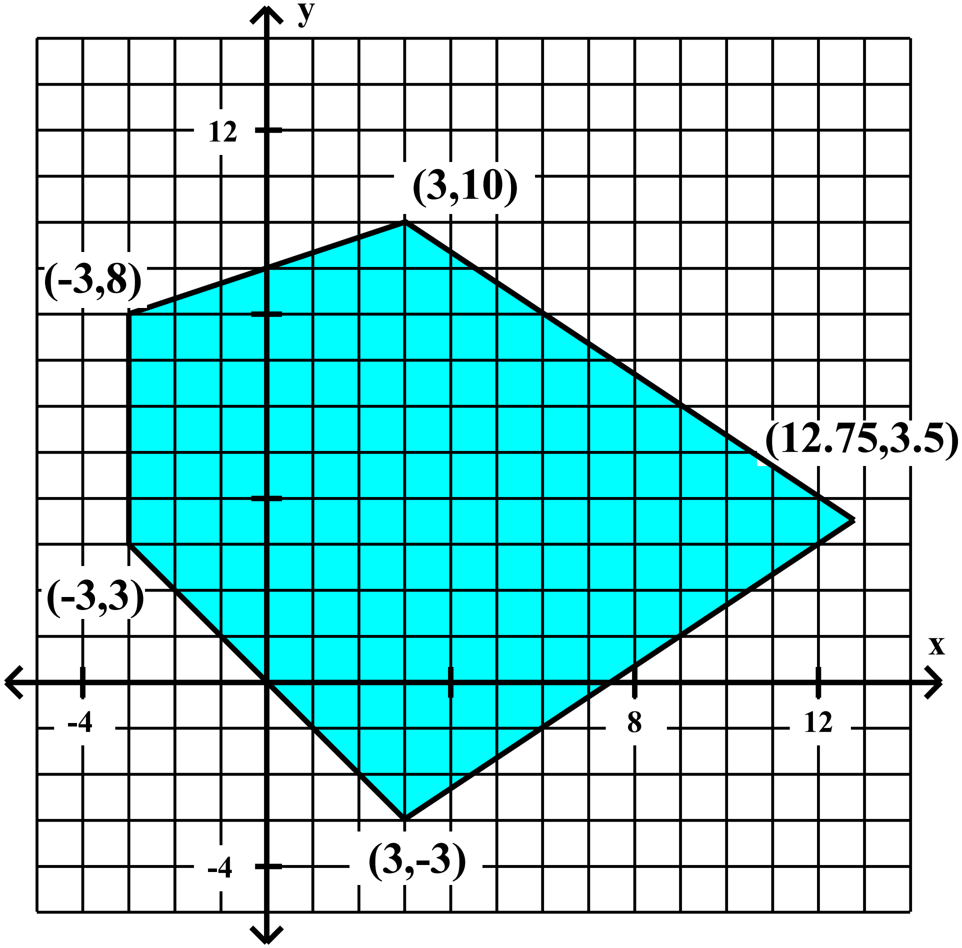

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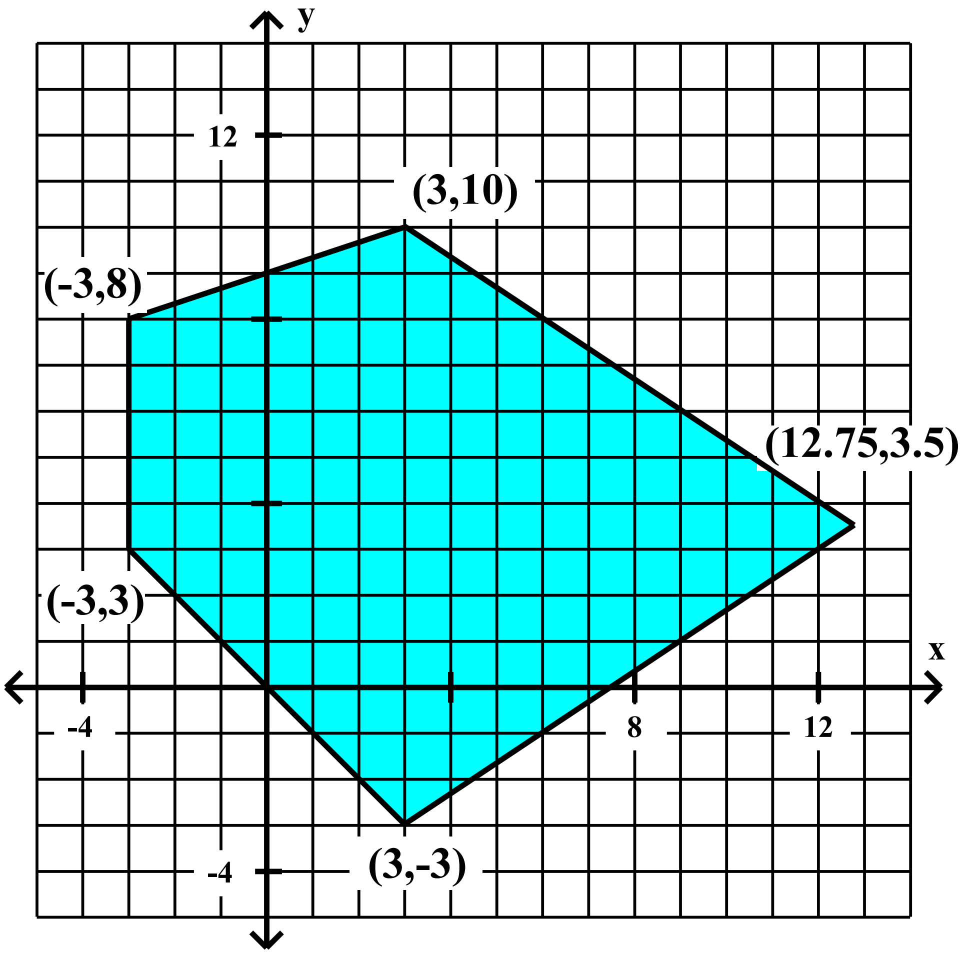

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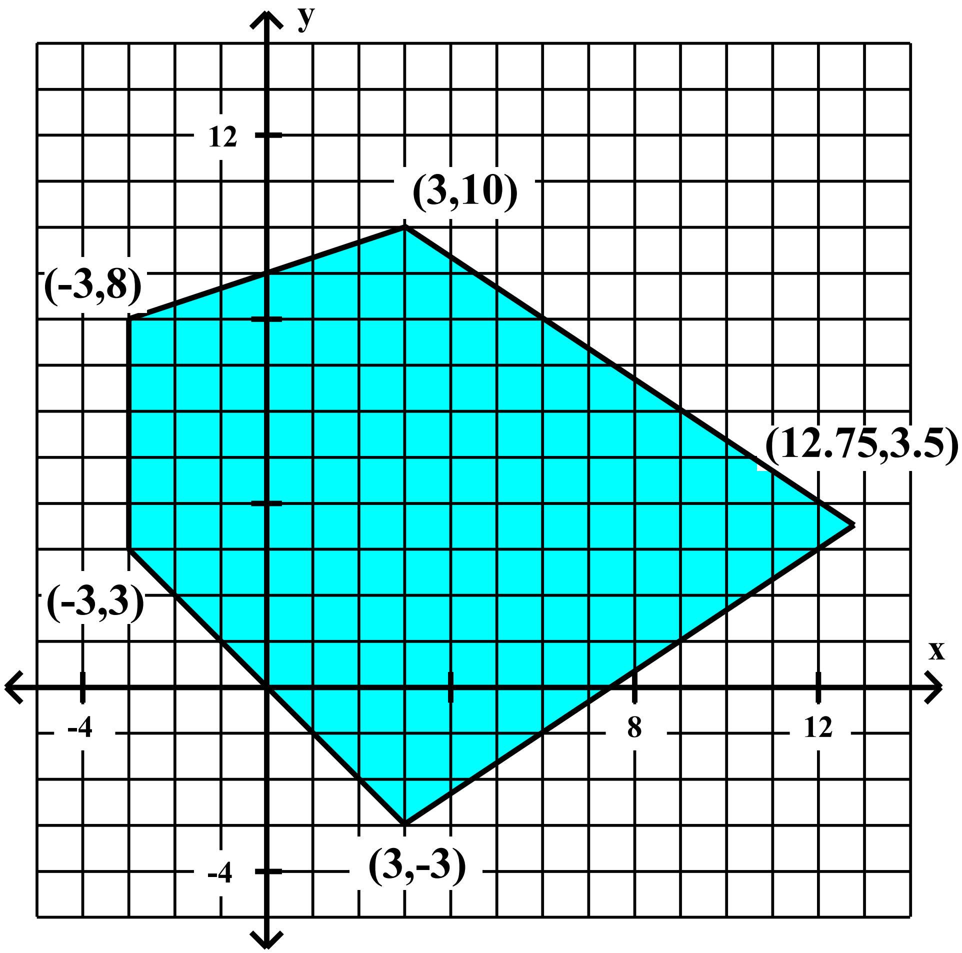

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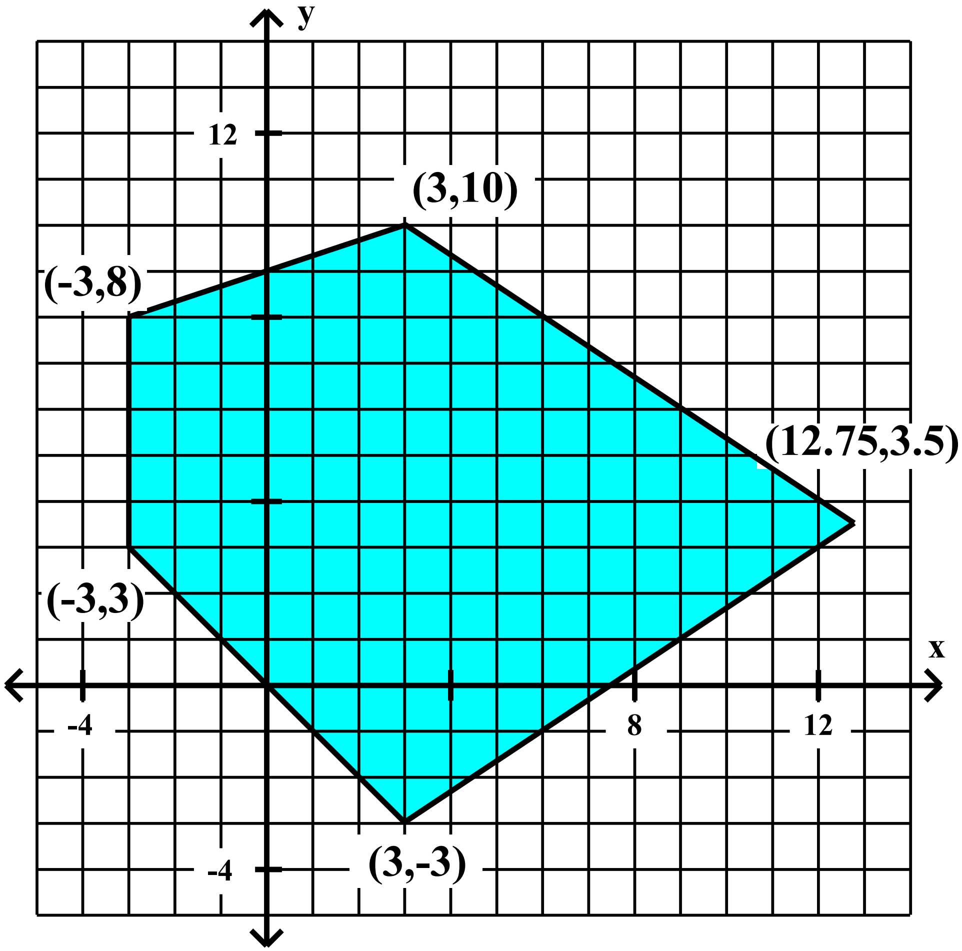

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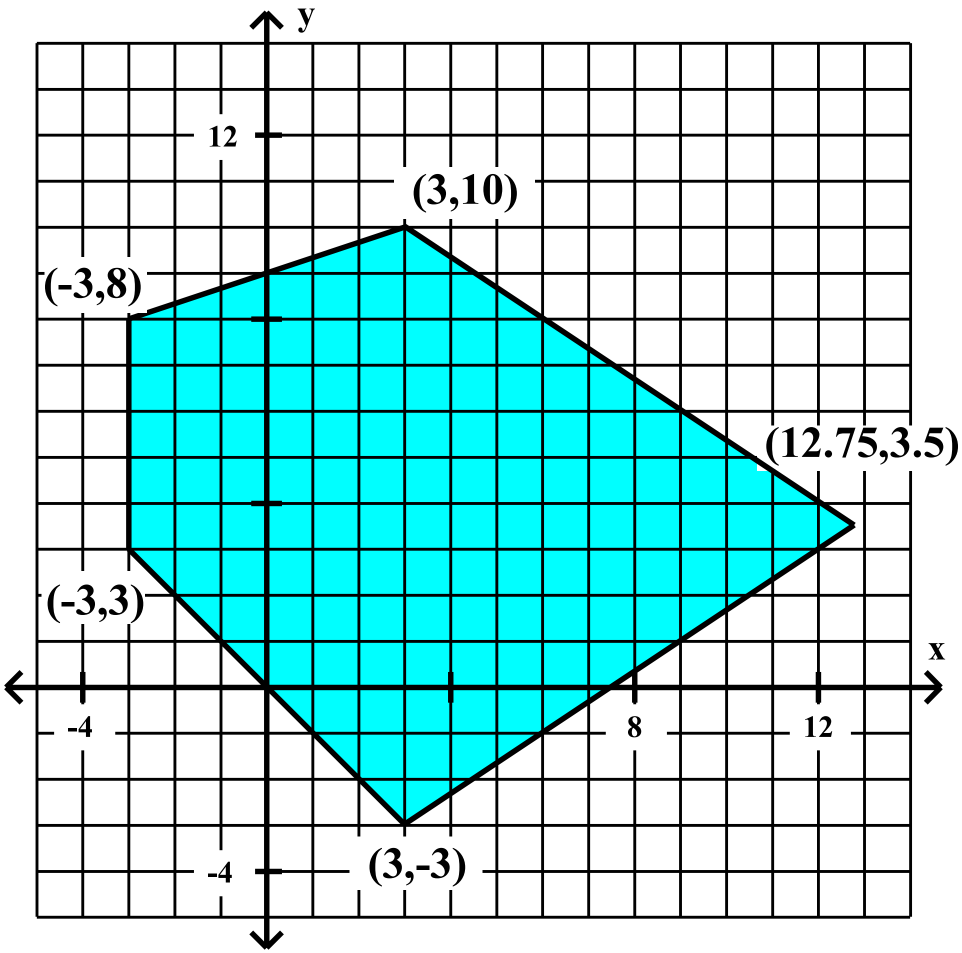

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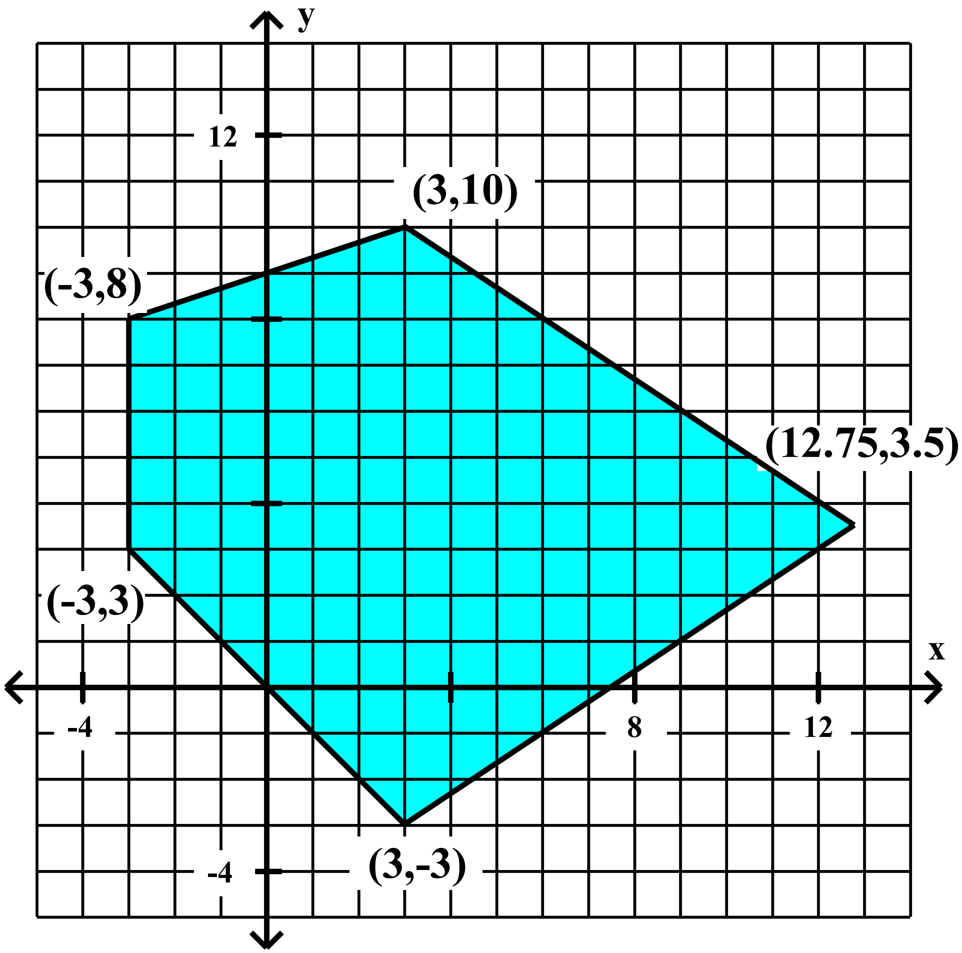

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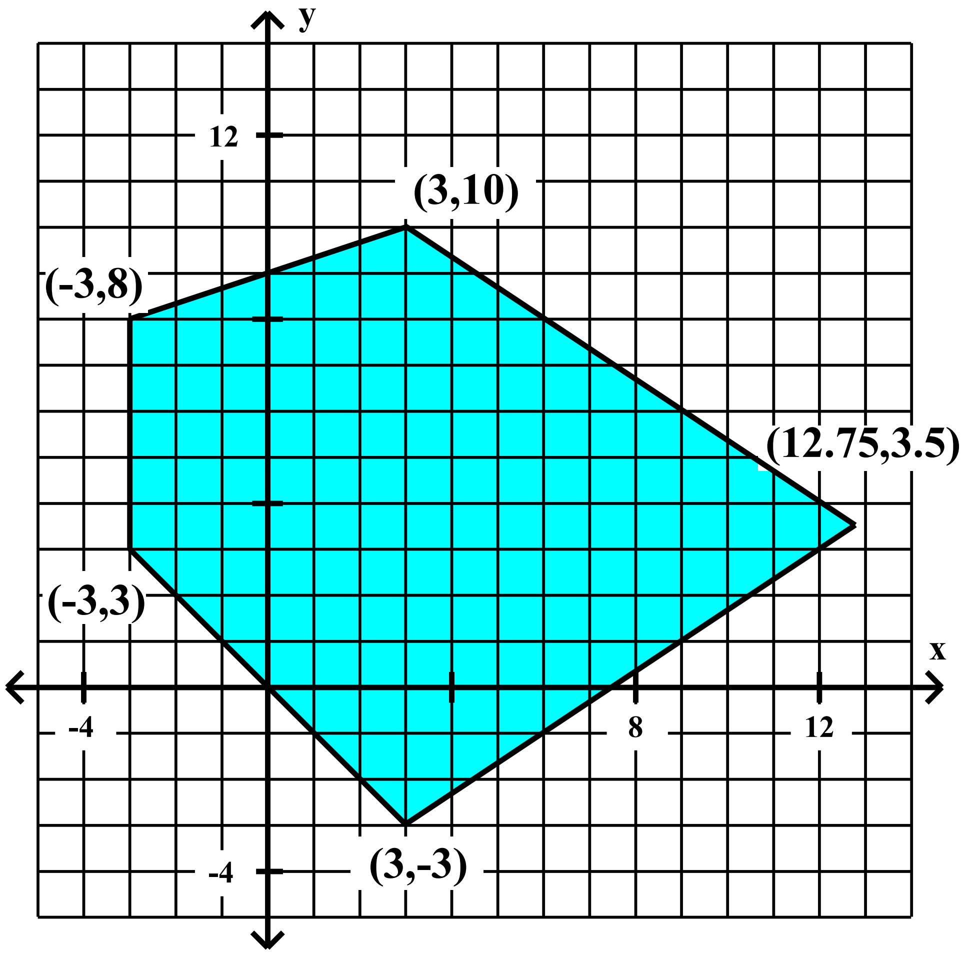

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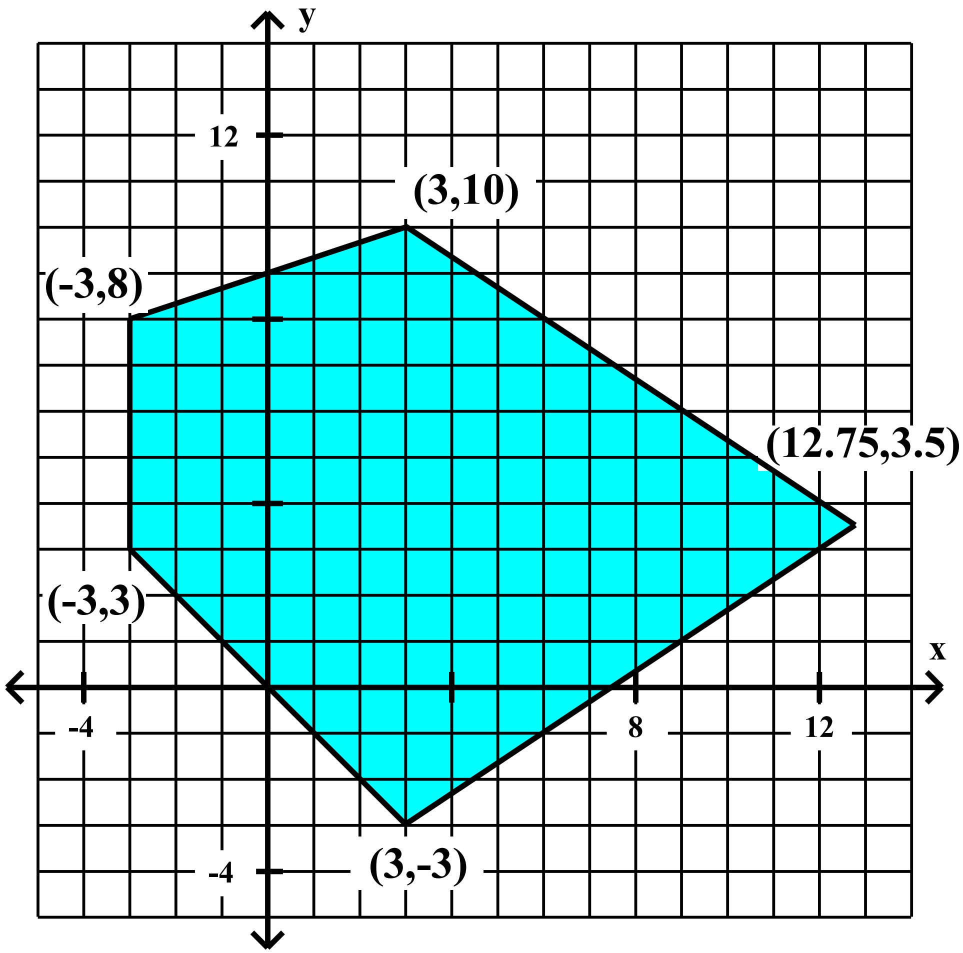

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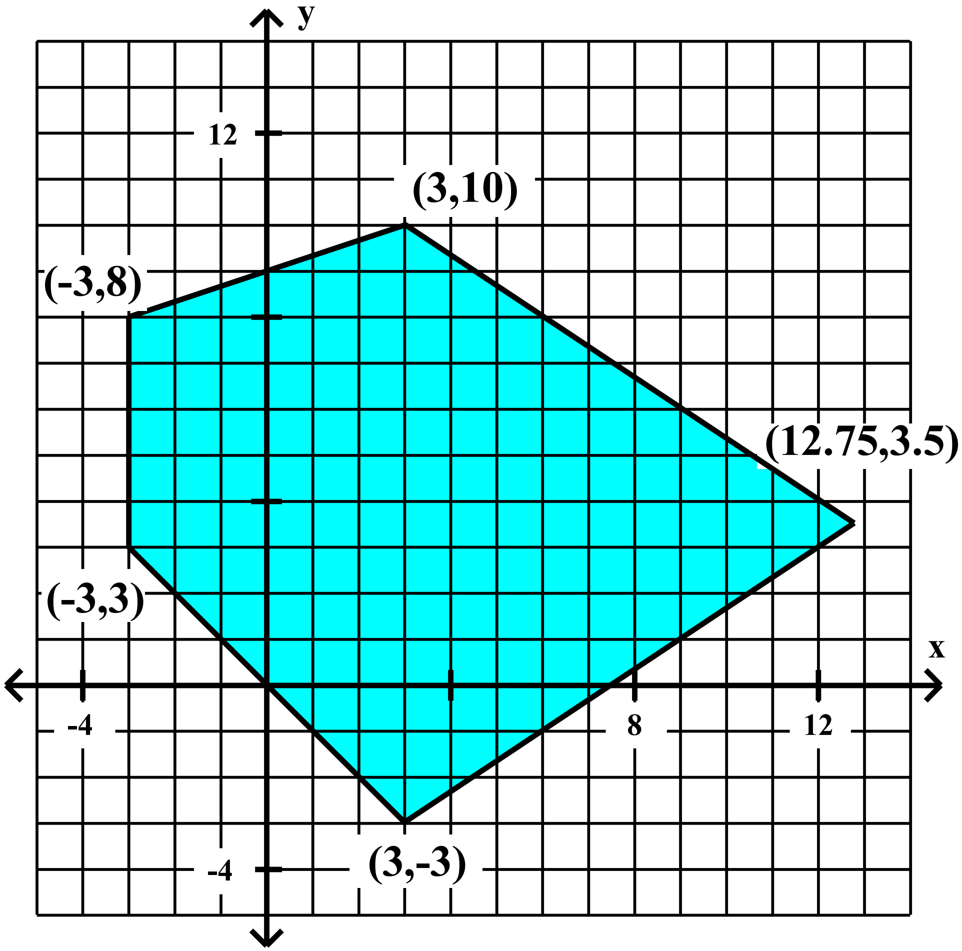
7. $F = 3x + y$

F_{max} = ______ at ________

F_{min} = ______ at ________

Algebra II Class Worksheet #4 Unit 4



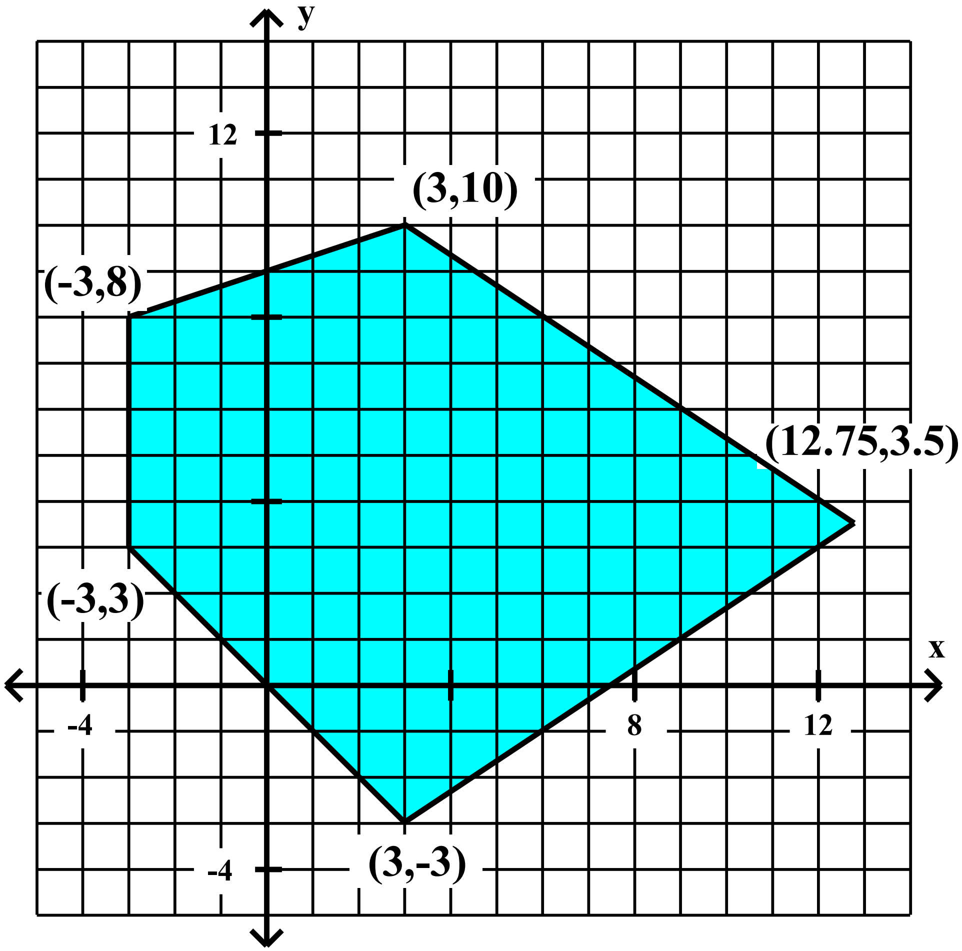
The **maximum** and the **minimum** values of F will occur at a vertex of the region.

7. $F = 3x + y$

F_{max} = ______ at ________

F_{min} = ______ at ________

Algebra II Class Worksheet #4 Unit 4



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7. $F = 3x + y$

F_{max} = ______ at ________

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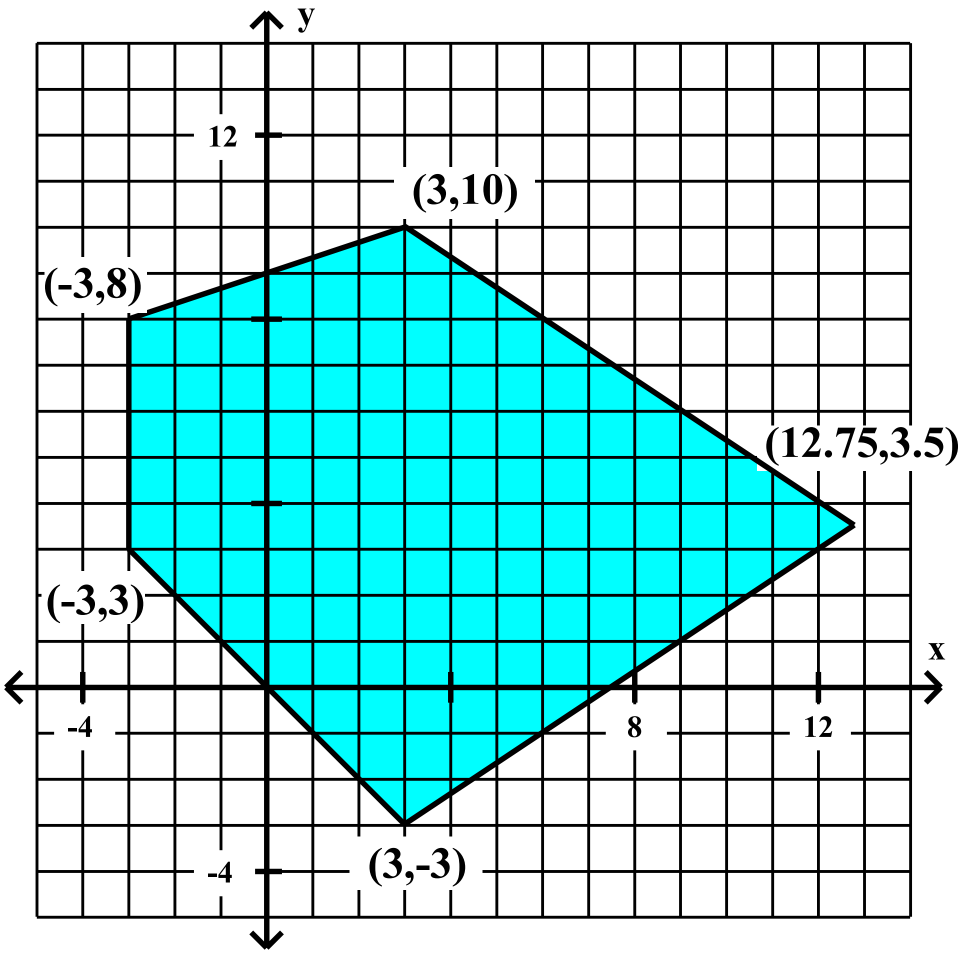
At (3,10)

Algebra II Class Worksheet #4 Unit 4



The **maximum** and the **minimum** values of F will occur at a vertex of the region.

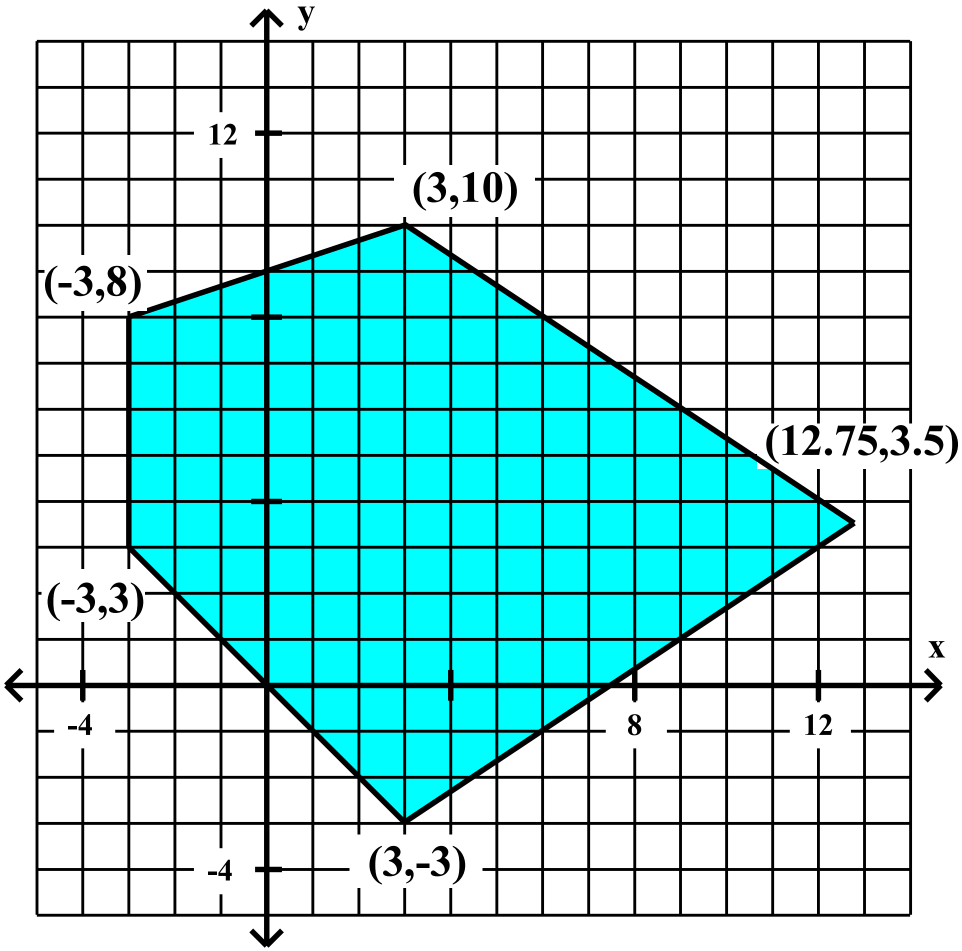
7. $F = 3x + y$

F_{max} = ______ at ________

F_{min} = ______ at ________

At (3,10) $\Rightarrow$ F =

Algebra II Class Worksheet #4 Unit 4



The **maximum** and the **minimum** values of F will occur at a vertex of the region.

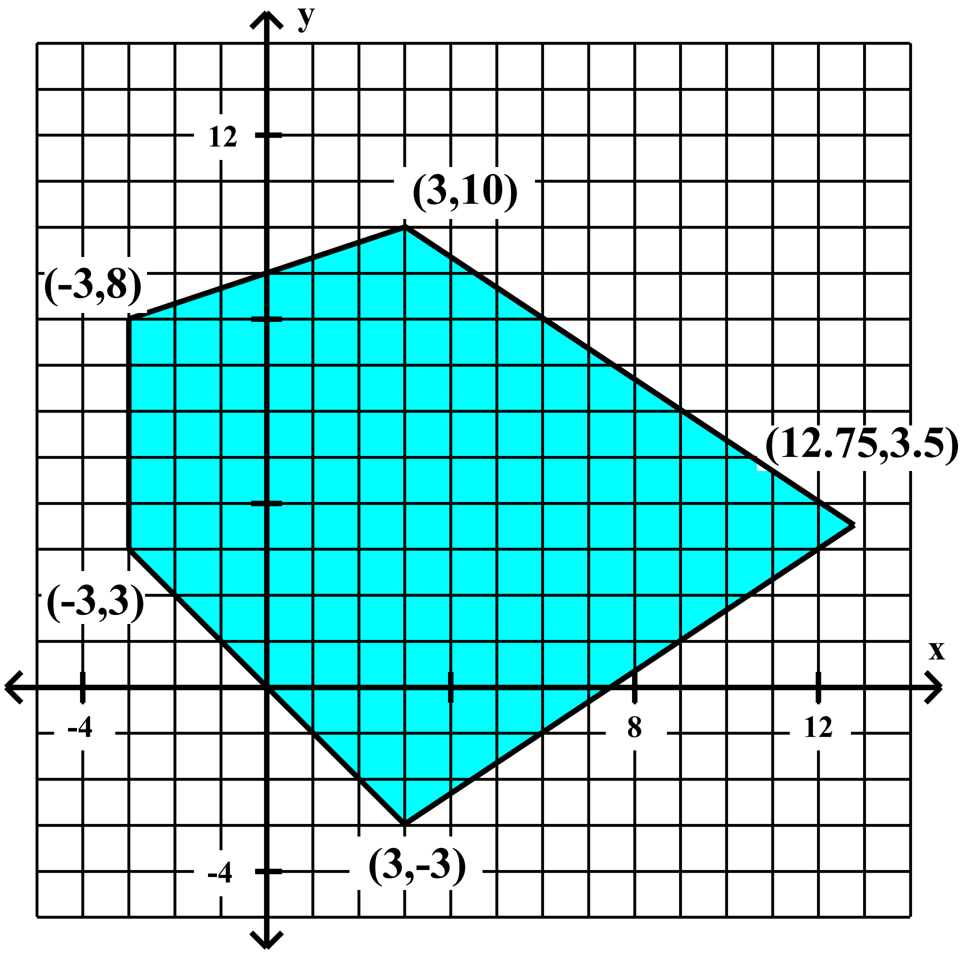
7. $F = 3x + y$

F_{max} = ______ at ________

F_{min} = ______ at ________

At (3,10) ⟹ F = 9

Algebra II Class Worksheet #4 Unit 4



The **maximum** and the **minimum** values of F will occur at a vertex of the region.

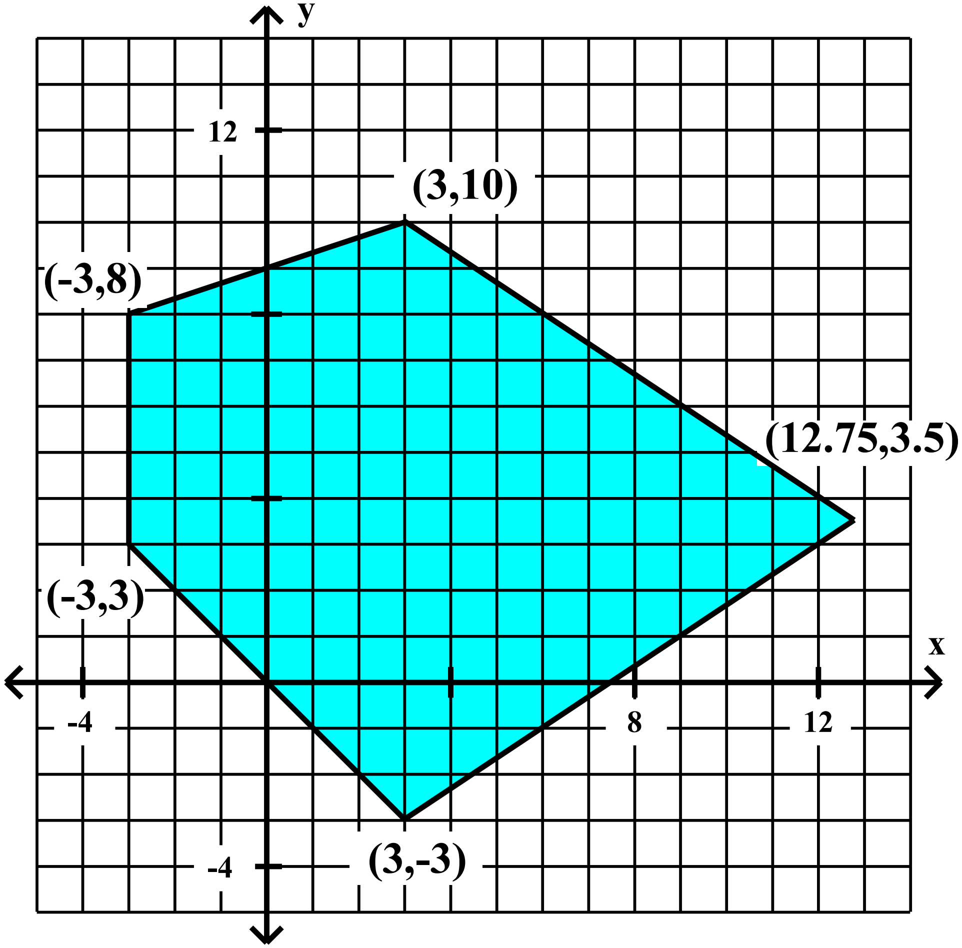
7. $F = 3x + y$

F_{max} = ______ at ________

F_{min} = ______ at ________

At (3,10) ⟹ F = 9 +

Algebra II Class Worksheet #4 Unit 4



The **maximum** and the **minimum** values of F will occur at a vertex of the region.

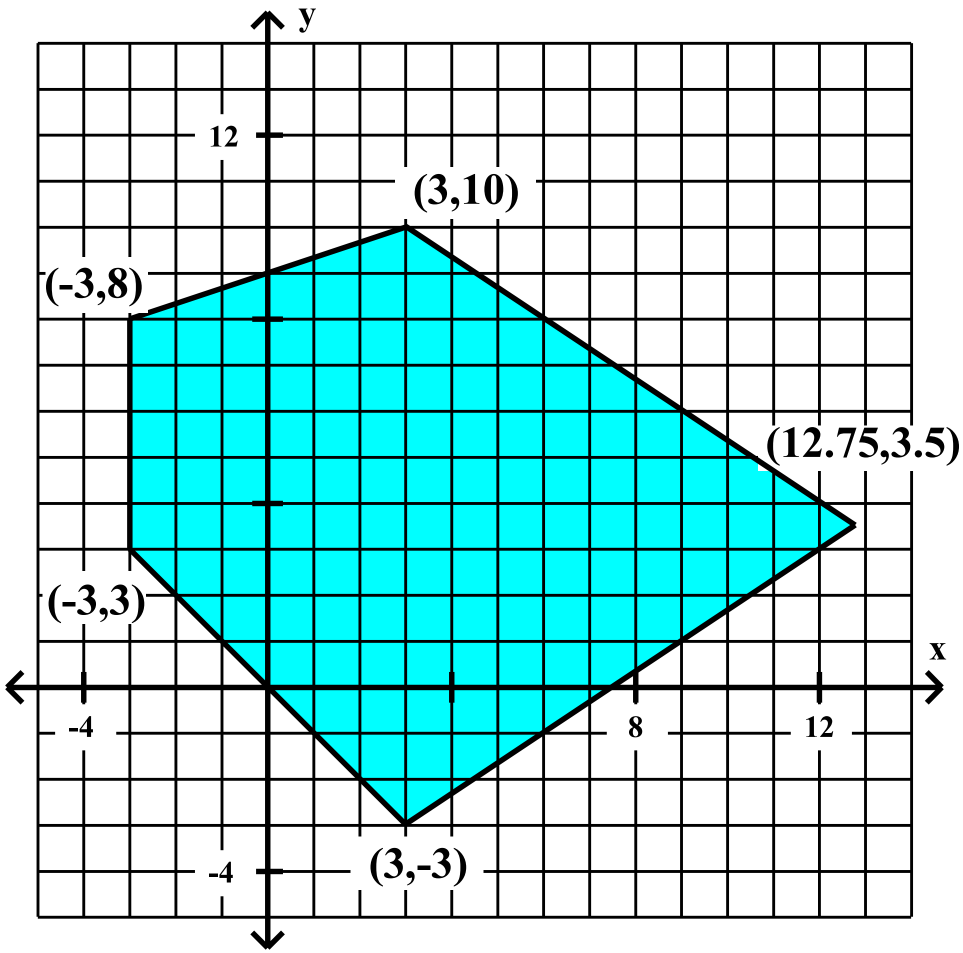
7. $F = 3x + y$

F_{max} = ______ at ________

F_{min} = ______ at ________

At (3,10) ⇨ $F = 9 + 10$

Algebra II Class Worksheet #4 Unit 4



The **maximum** and the **minimum** values of F will occur at a vertex of the region.

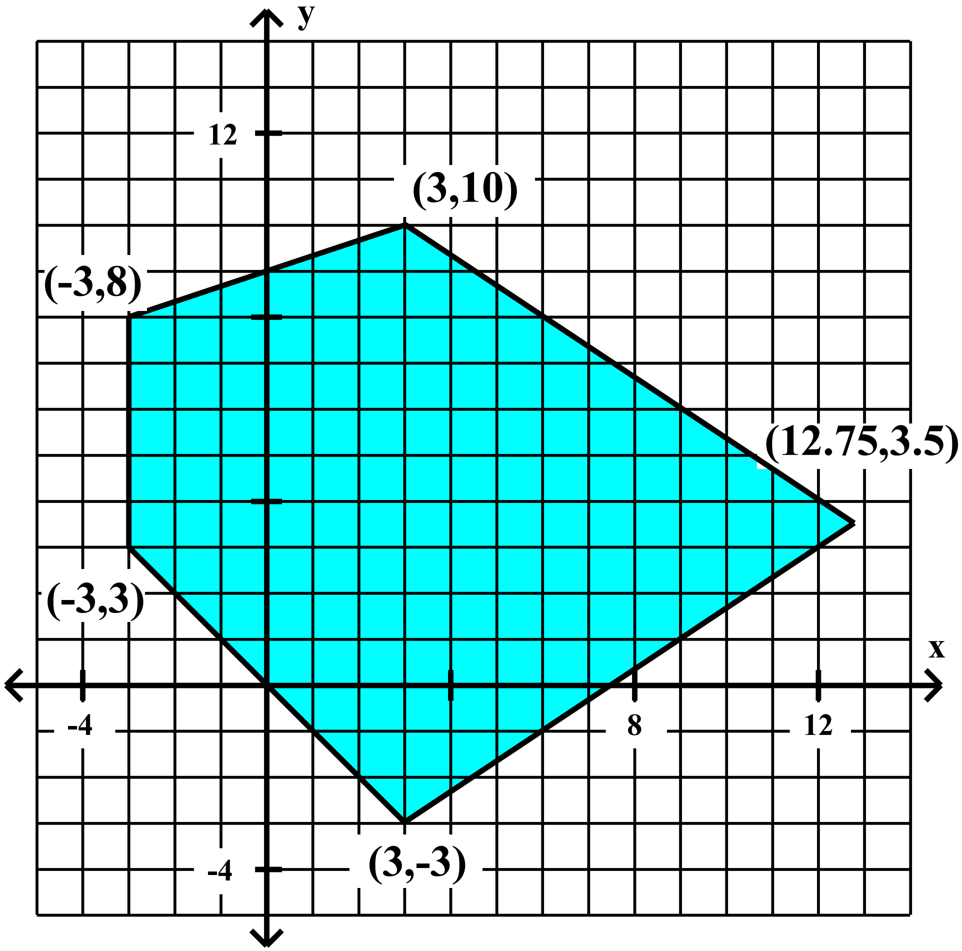
7. $F = 3x + y$

F_{max} = ______ at ________

F_{min} = ______ at ________

At (3,10) $\Rightarrow$ F = 9 + 10 =

Algebra II Class Worksheet #4 Unit 4



The **maximum** and the **minimum** values of F will occur at a vertex of the region.

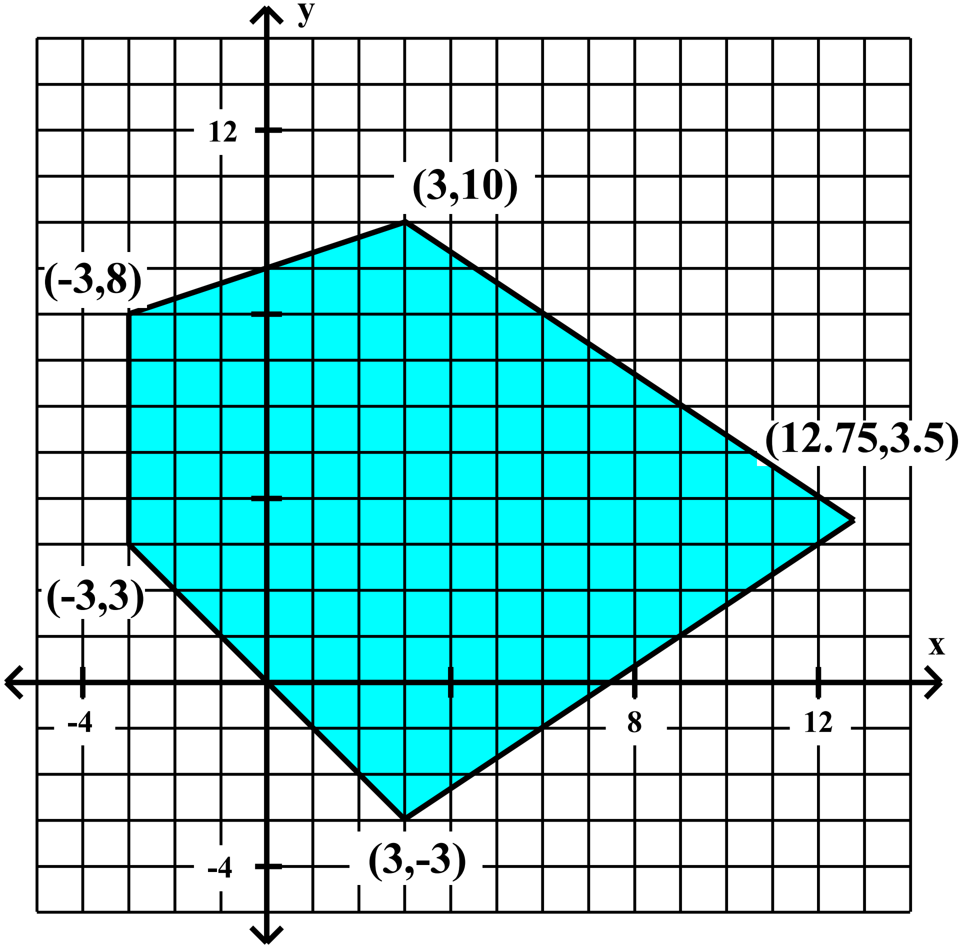
7. $F = 3x + y$

F_{max} = ______ at _________

F_{min} = ______ at _________

At (3,10) $\Rightarrow$ F = 9 + 10 = **19**

Algebra II   Class Worksheet #4   Unit 4



The **maximum** and the **minimum** values of F will occur at a vertex of the region.

7. $F = 3x + y$

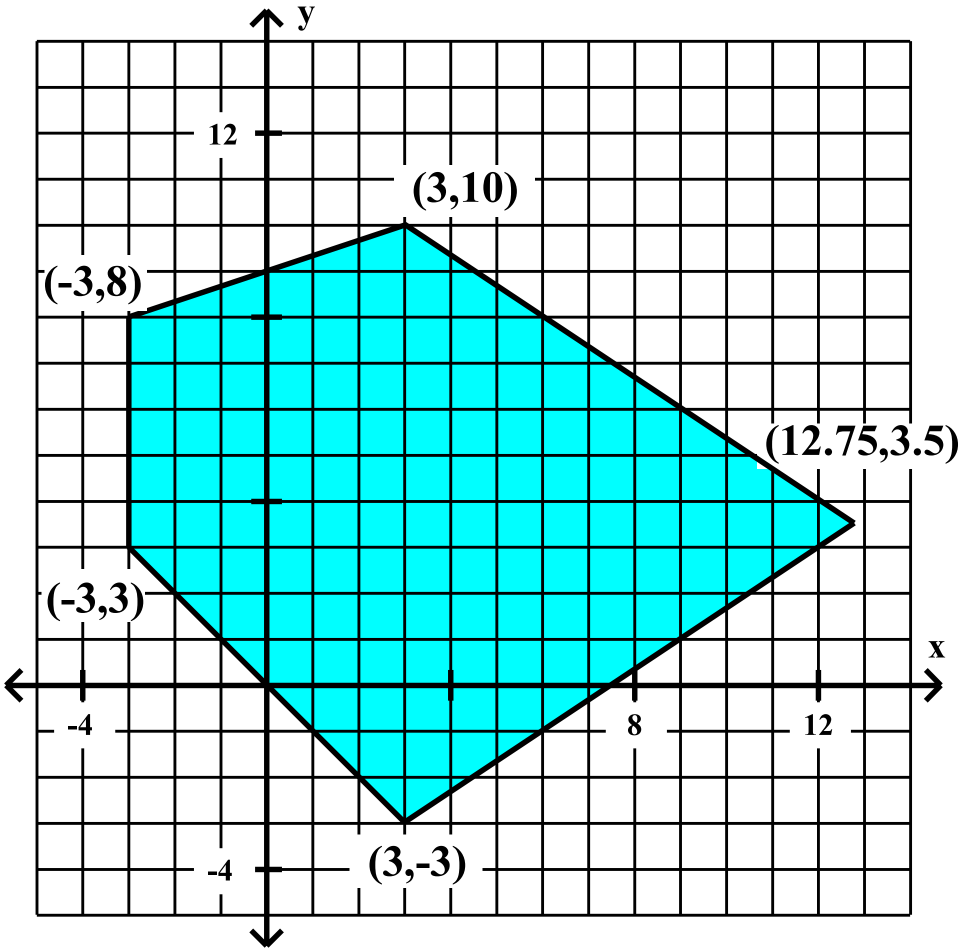
F_{max} = ______ at _________

F_{min} = ______ at _________

At (3,10) ⇨ F = 9 + 10 = **19**

At (-3,8)

Algebra II Class Worksheet #4 Unit 4



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7. $F = 3x + y$

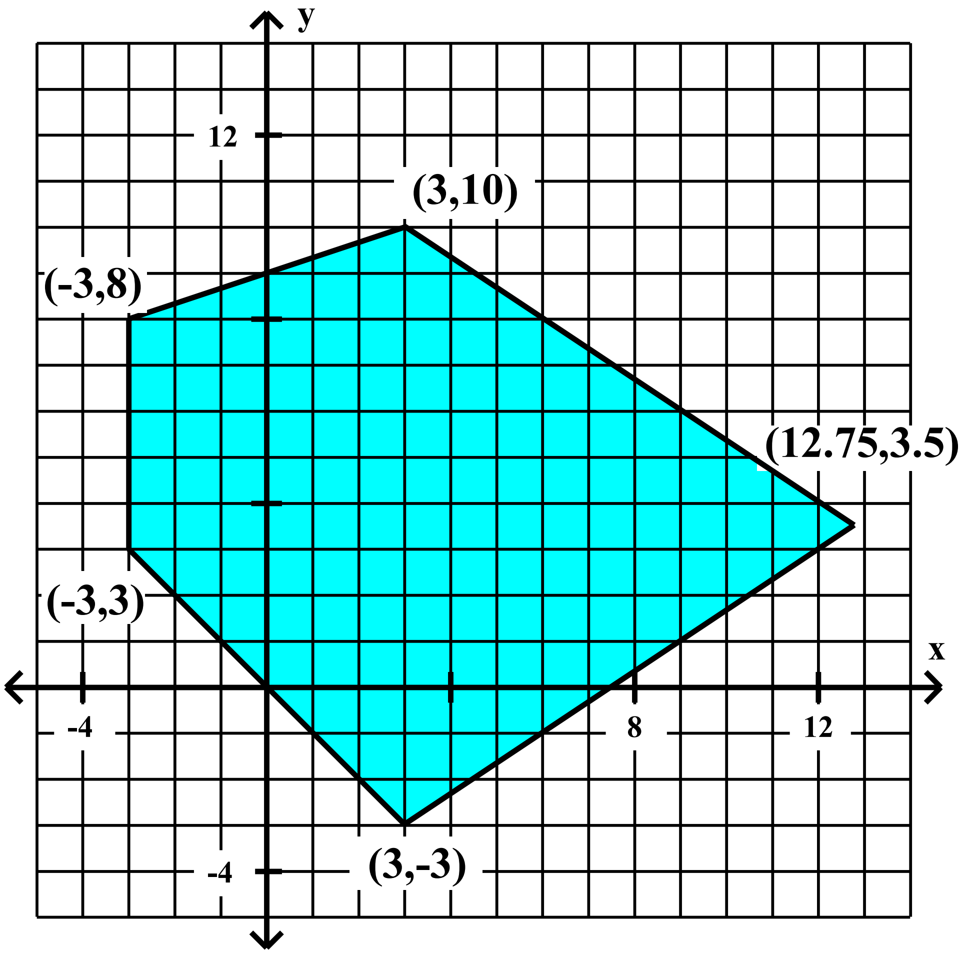
F_{max} = ______ at ________

F_{min} = ______ at ________

At (3,10) $\Rightarrow$ F = 9 + 10 = **19**

At (-3,8) $\Rightarrow$ F =

Algebra II   Class Worksheet #4   Unit 4



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7. $F = 3x + y$

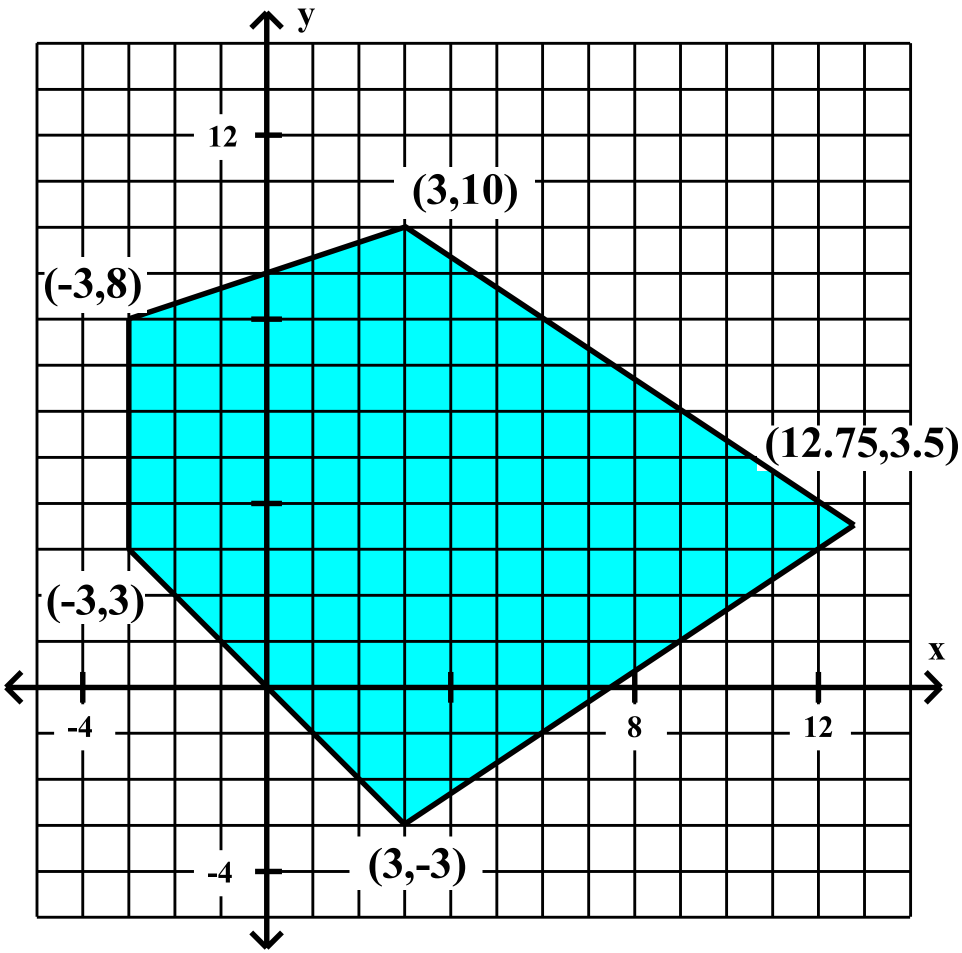
F_{max} = ______ at ________

F_{min} = ______ at ________

At (3,10) ⟹ F = 9 + 10 = **19**

At (-3,8) ⟹ F = -9

Algebra II Class Worksheet #4 Unit 4



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7. $F = 3x + y$

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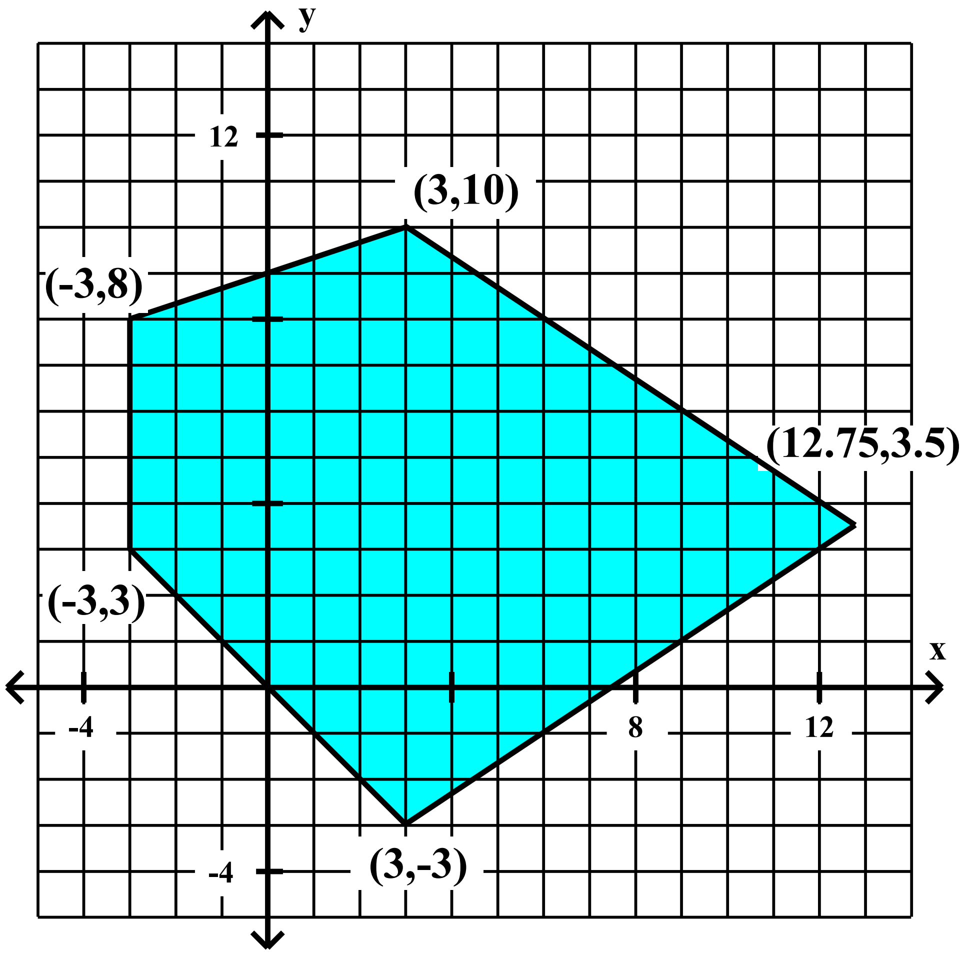
At (3,10) ⇨ F = 9 + 10 = **19**

At (-3,8) ⇨ F = -9 +

Algebra II Class Worksheet #4 Unit 4



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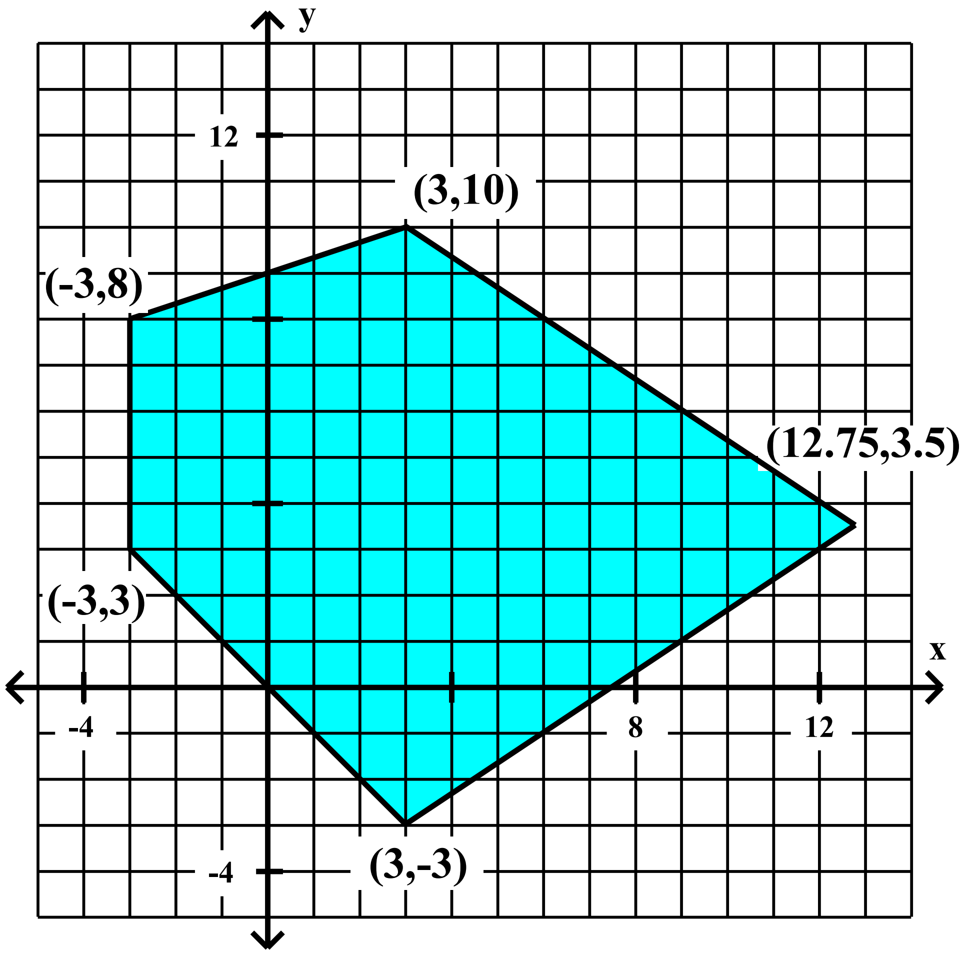
At (3,10) ⇨ F = 9 + 10 = **19**

At (-3,8) ⇨ F = -9 + 8

Algebra II Class Worksheet #4 Unit 4



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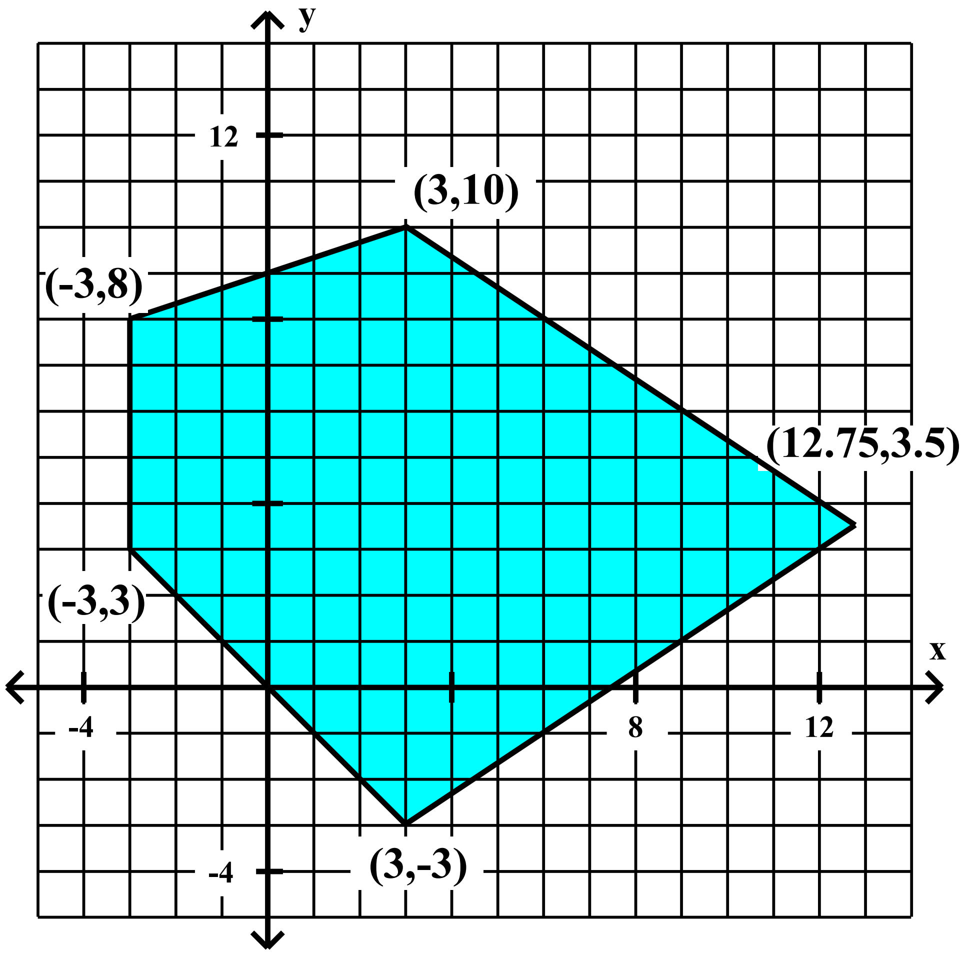
At (3,10) $\Rightarrow$ $F = 9 + 10 = \mathbf{19}$

At (-3,8) $\Rightarrow$ $F = -9 + 8 =$

Algebra II Class Worksheet #4 Unit 4



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7. $F = 3x + y$

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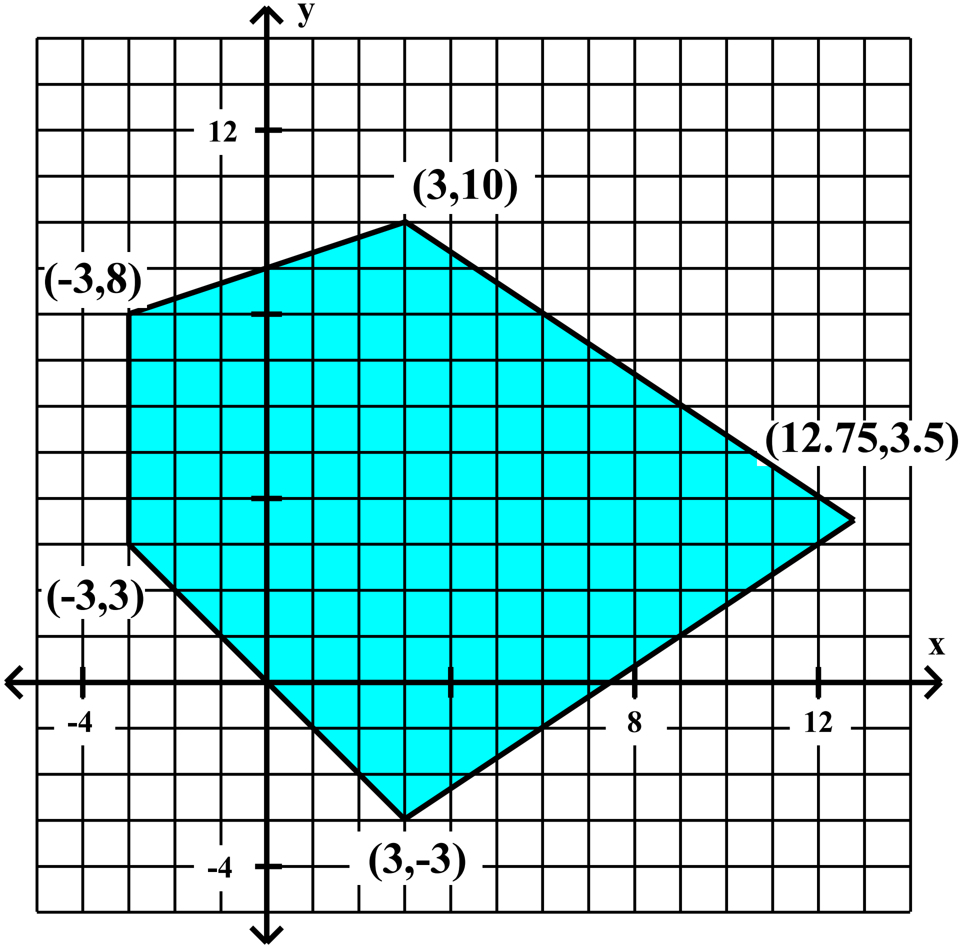
At (3,10) ⇒ F = 9 + 10 = **19**

At (-3,8) ⇒ F = -9 + 8 = **-1**

Algebra II Class Worksheet #4 Unit 4



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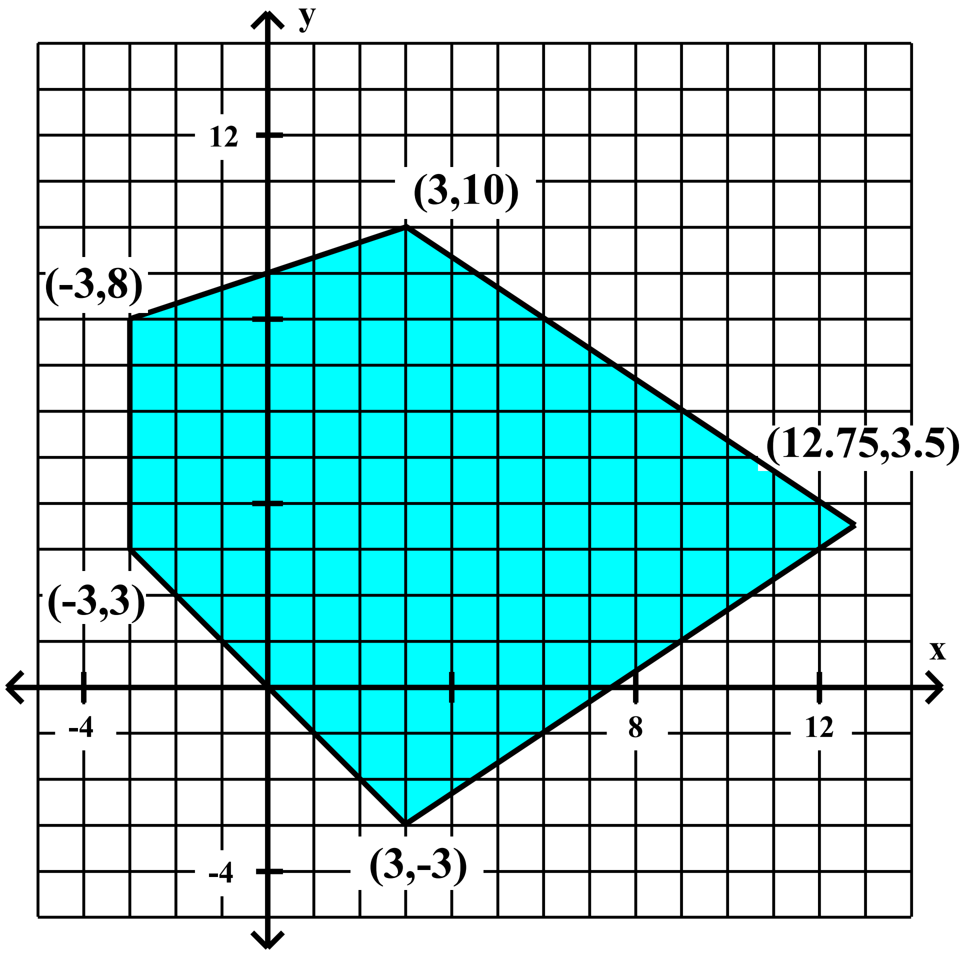
At (-3,8) ⇨ F = -9 + 8 = **-1**

At (-3,3)

Algebra II   Class Worksheet #4   Unit 4



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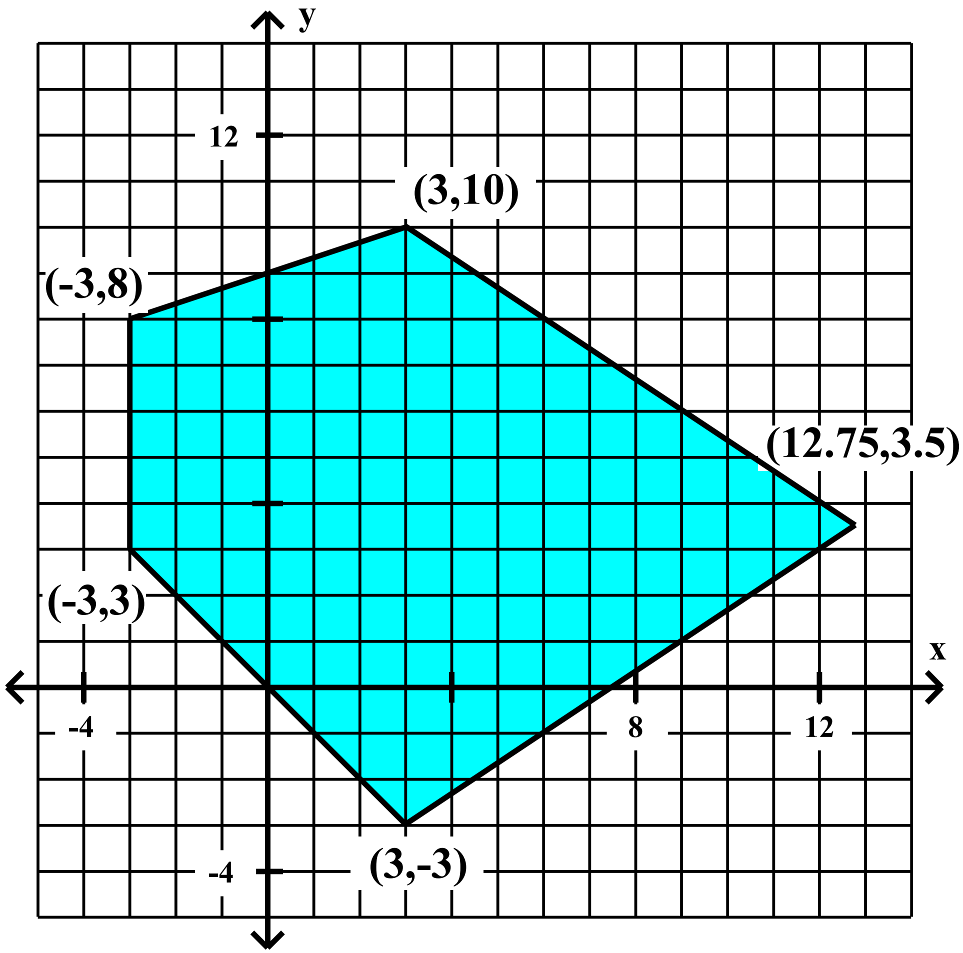
At (3,10) $\Longrightarrow$ F = 9 + 10 = **19**

At (-3,8) $\Longrightarrow$ F = -9 + 8 = **-1**

At (-3,3) $\Longrightarrow$ F =

Algebra II   Class Worksheet #4   Unit 4



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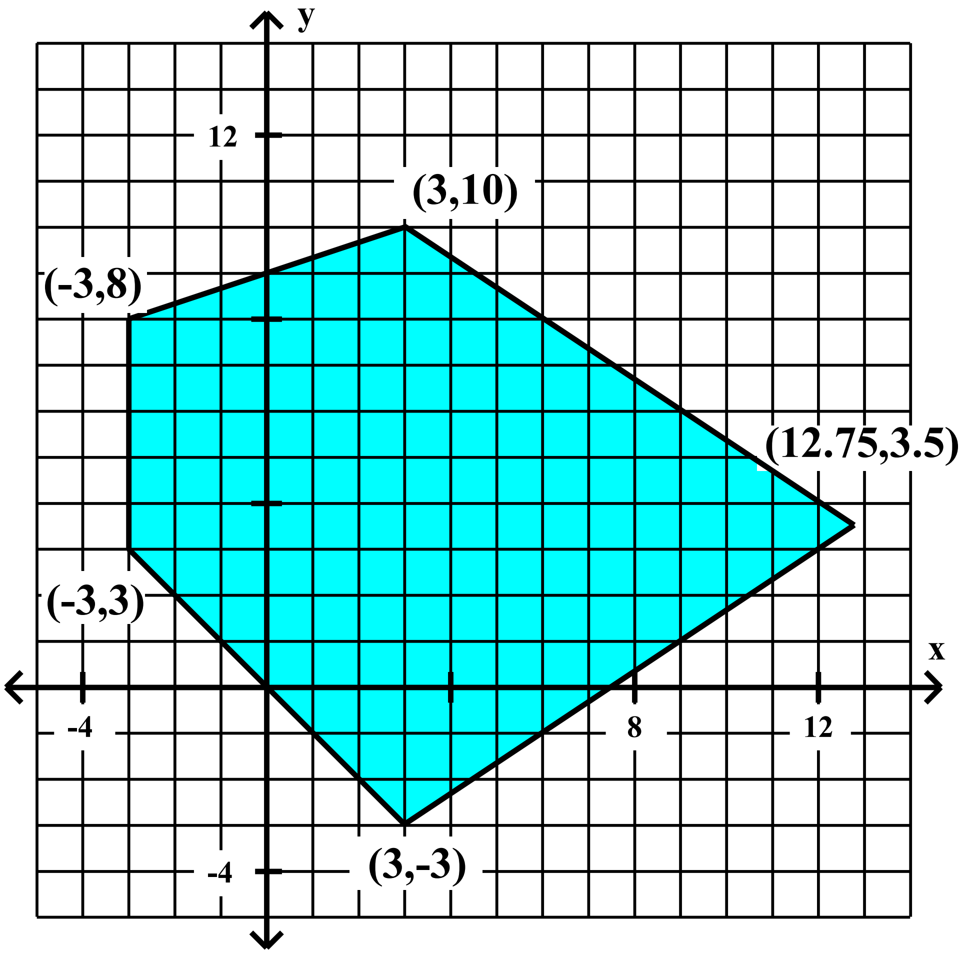
At (-3,8) ⇨ F = -9 + 8 = **-1**

At (-3,3) ⇨ F = -9

Algebra II   Class Worksheet #4   Unit 4



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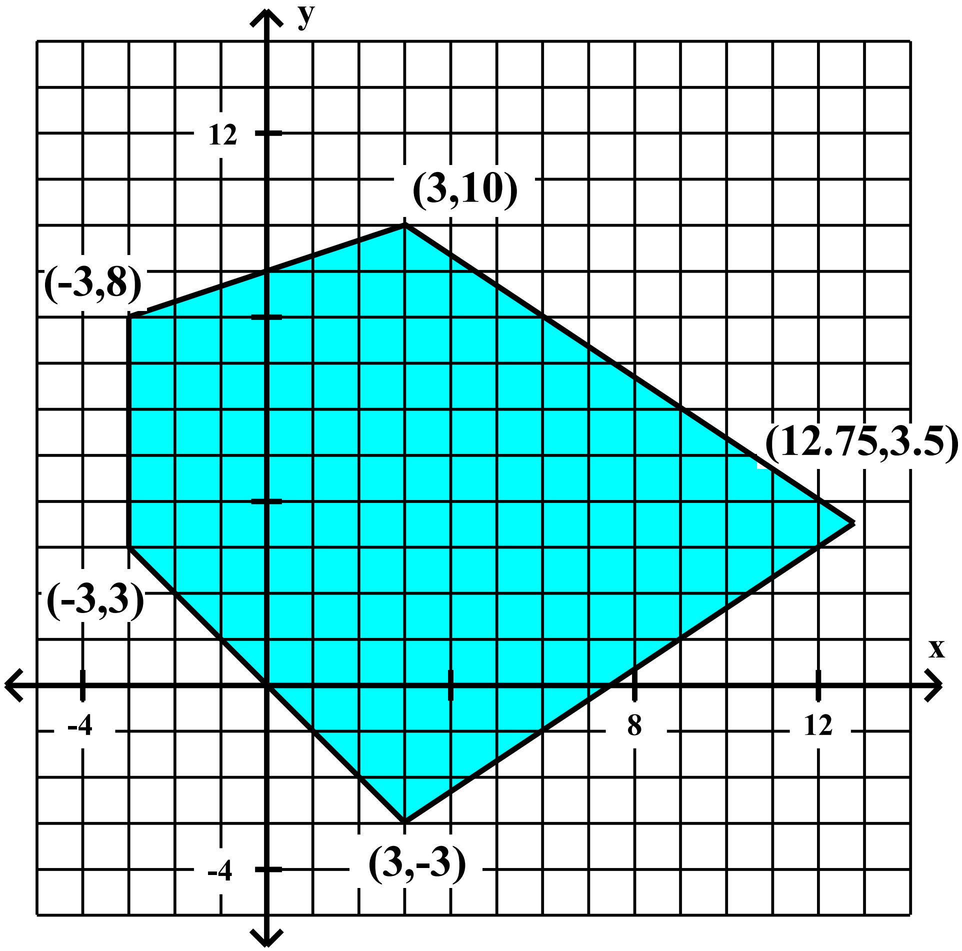
At (-3,8) ⇨ F = -9 + 8 = **-1**

At (-3,3) ⇨ F = -9 +

Algebra II Class Worksheet #4 Unit 4



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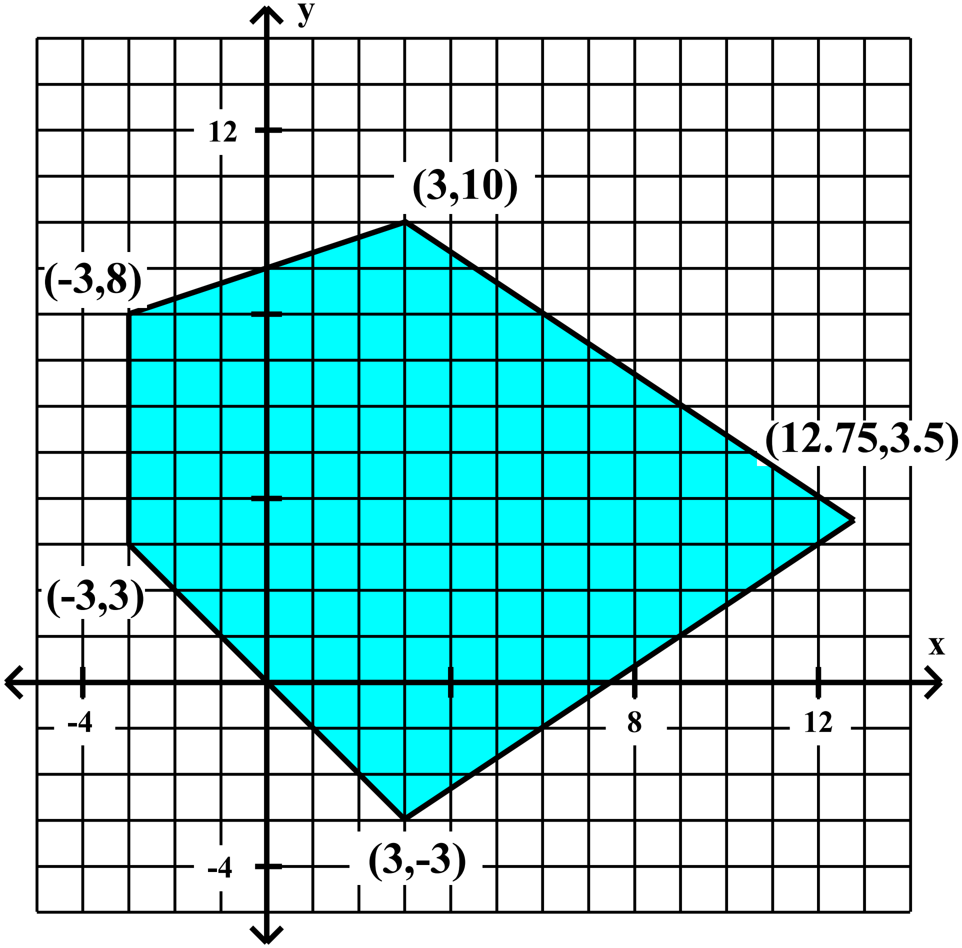
At (-3,3) $\Rightarrow$ F = -9 + 3

Algebra II Class Worksheet #4 Unit 4



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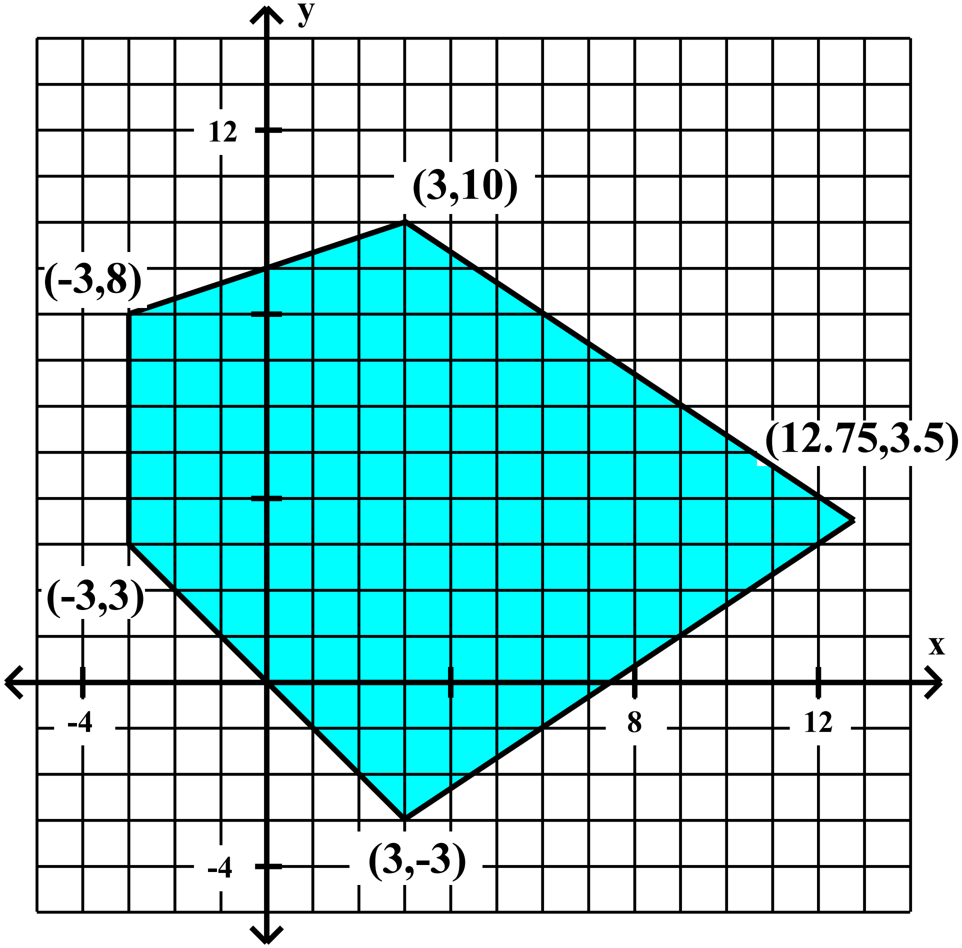
Algebra II Class Worksheet #4 Unit 4



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At (3,10) $\Rightarrow$ F = 9 + 10 = **19**

At (-3,8) $\Rightarrow$ F = -9 + 8 = **-1**

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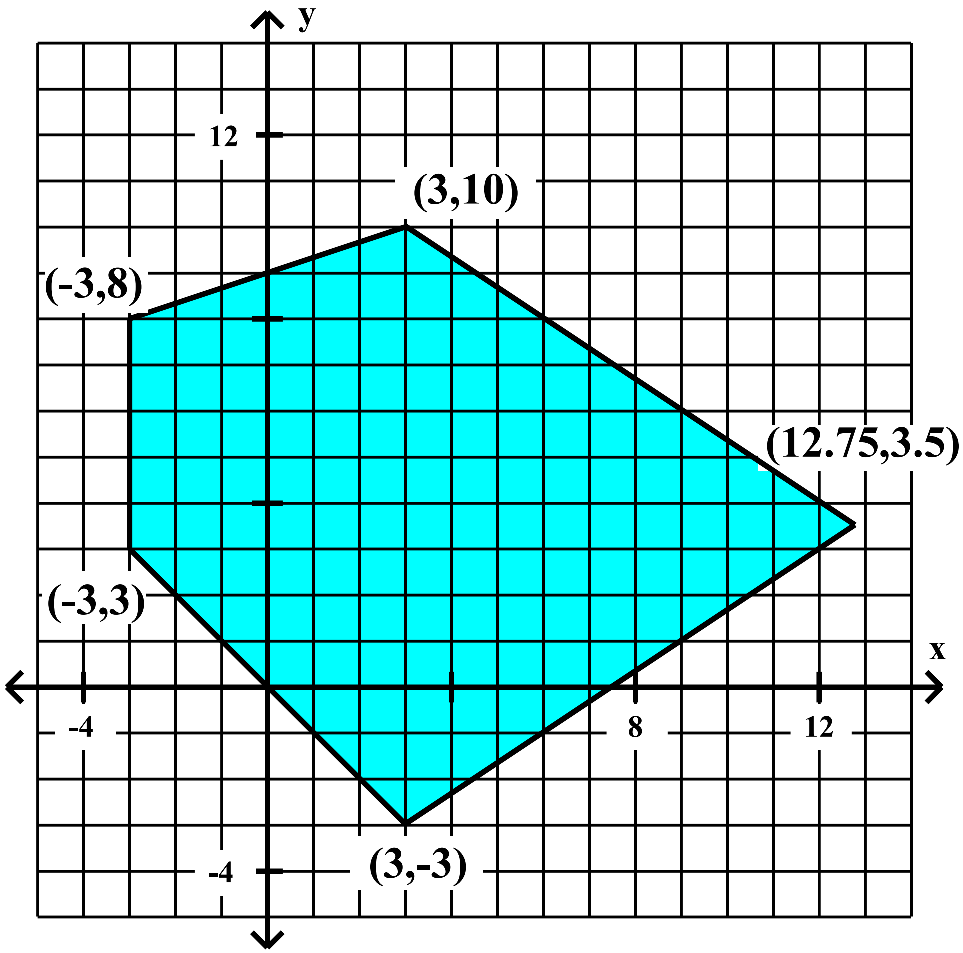
Algebra II Class Worksheet #4 Unit 4



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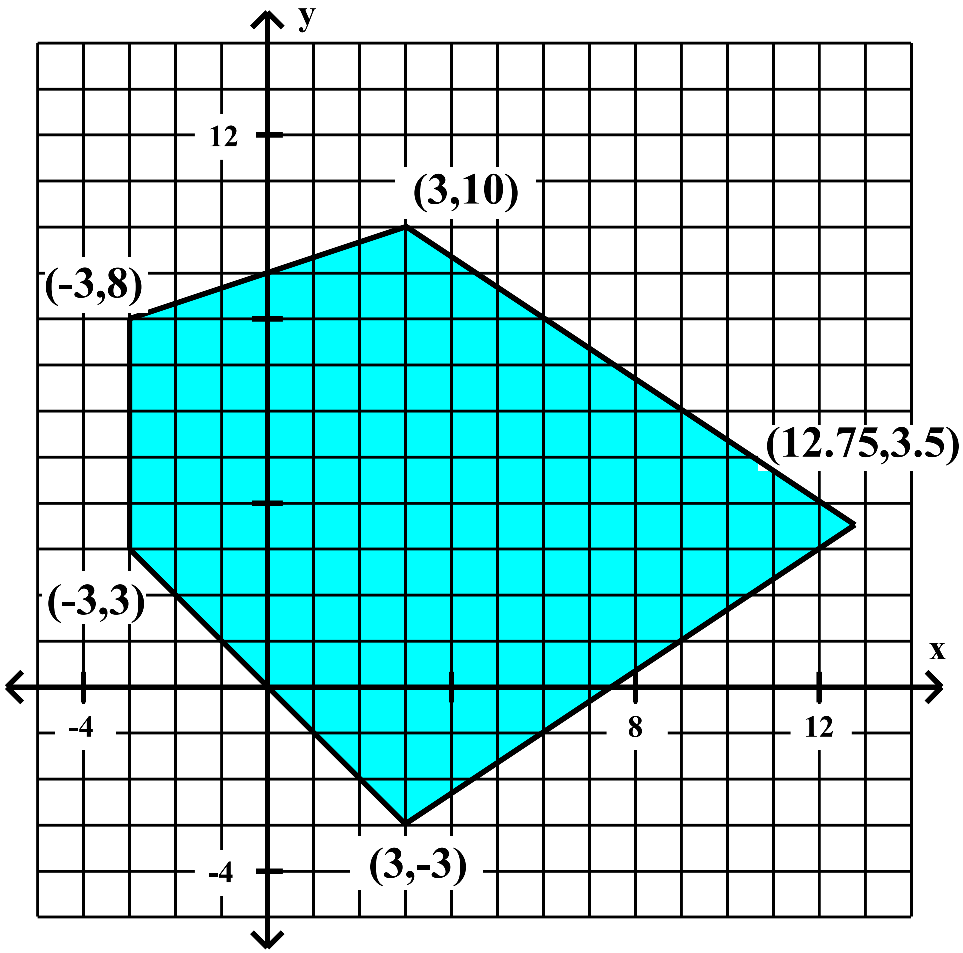
At (-3,8) ⇨ F = -9 + 8 = **-1**

At (-3,3) ⇨ F = -9 + 3 = **-6**

At (3,-3)

Algebra II Class Worksheet #4 Unit 4



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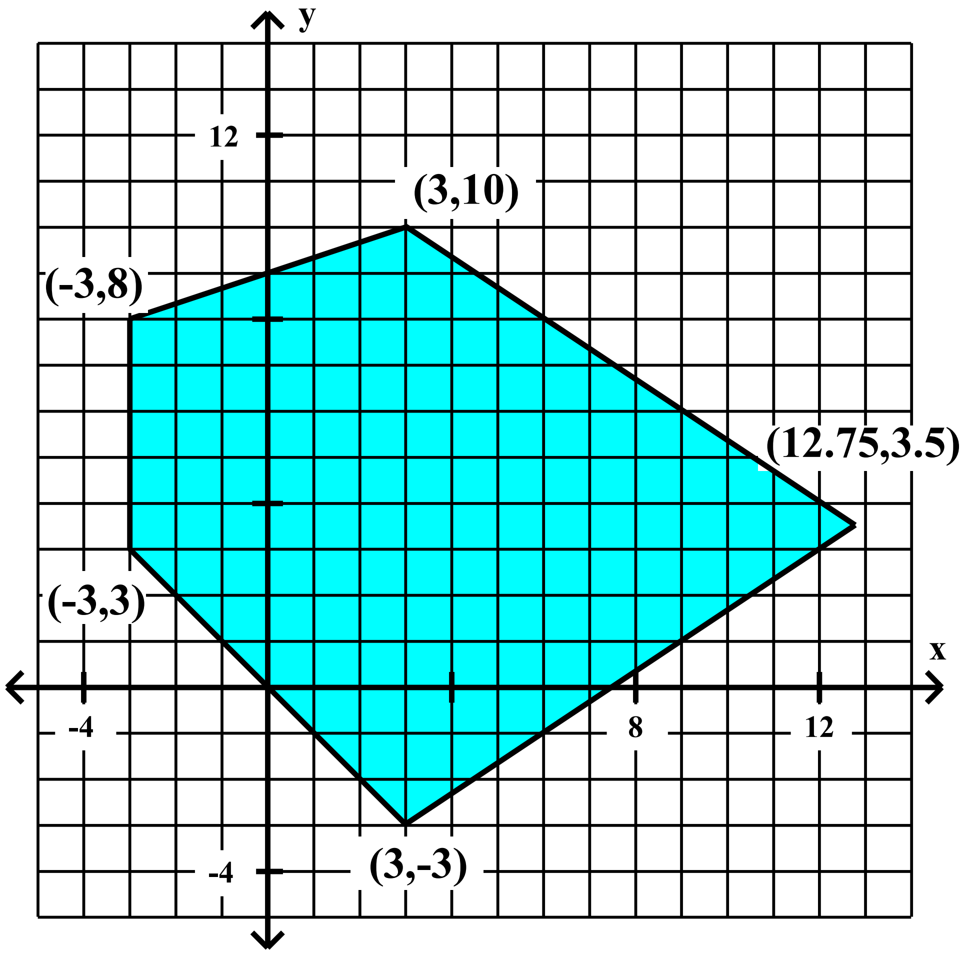
At (-3,8) ⇨ F = -9 + 8 = **-1**

At (-3,3) ⇨ F = -9 + 3 = **-6**

At (3,-3) ⇨ F =

Algebra II Class Worksheet #4 Unit 4



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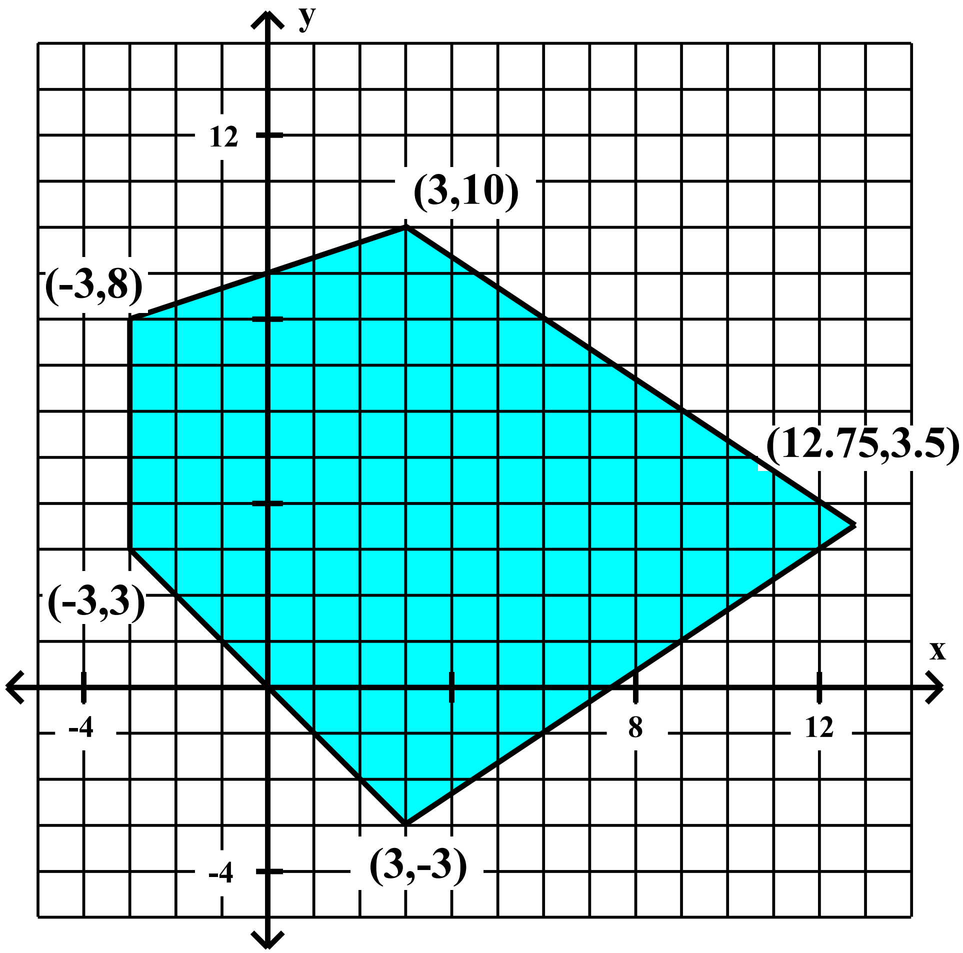
At (-3,3) ⟹ F = -9 + 3 = **-6**

At (3,-3) ⟹ F = 9

Algebra II Class Worksheet #4 Unit 4



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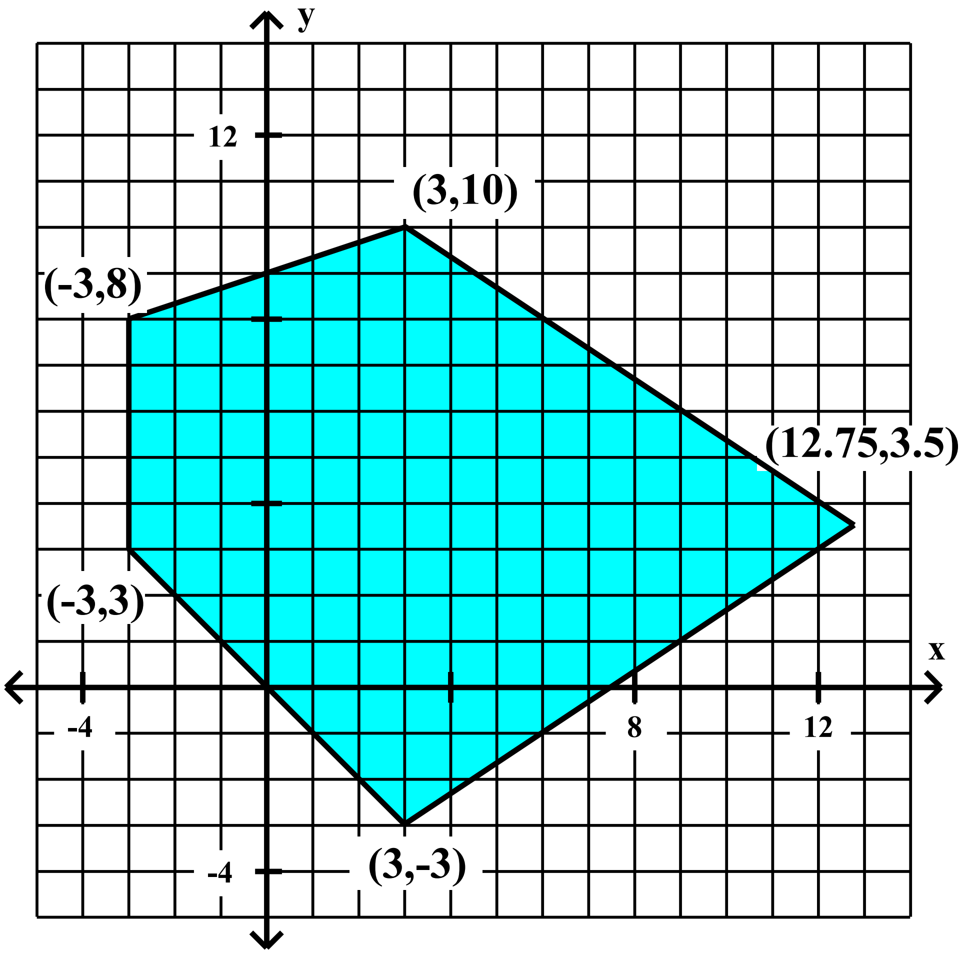
At (3,-3) $\Rightarrow$ F = 9 +

Algebra II Class Worksheet #4 Unit 4



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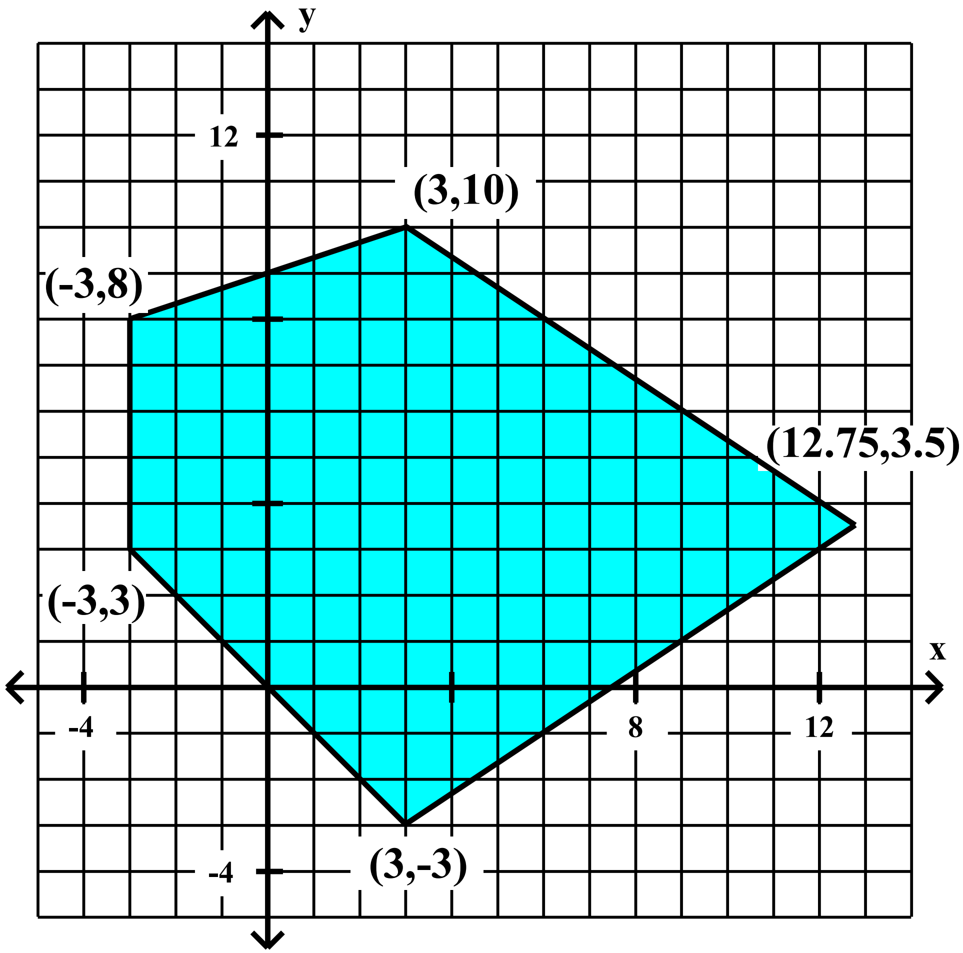
At (-3,8) ⇨ F = -9 + 8 = **-1**

At (-3,3) ⇨ F = -9 + 3 = **-6**

At (3,-3) ⇨ F = 9 + -3

Algebra II Class Worksheet #4 Unit 4



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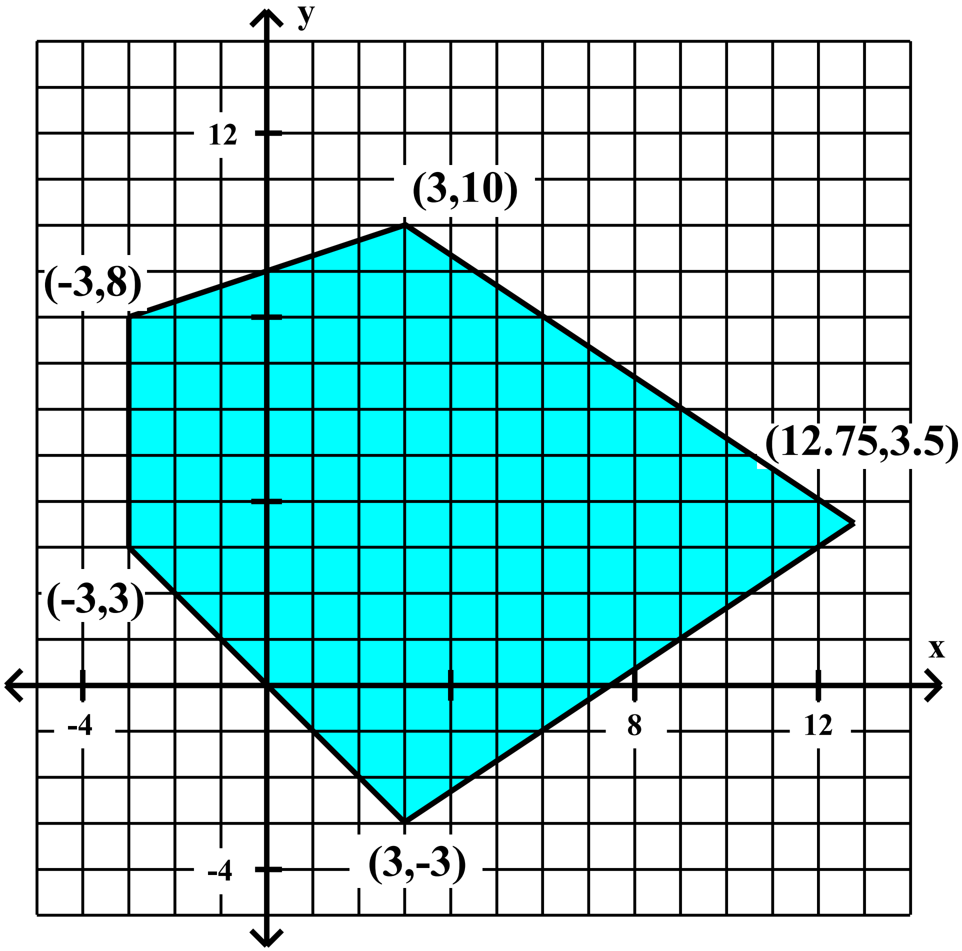
At (3,-3) ⇨ F = 9 + -3 =

Algebra II Class Worksheet #4 Unit 4



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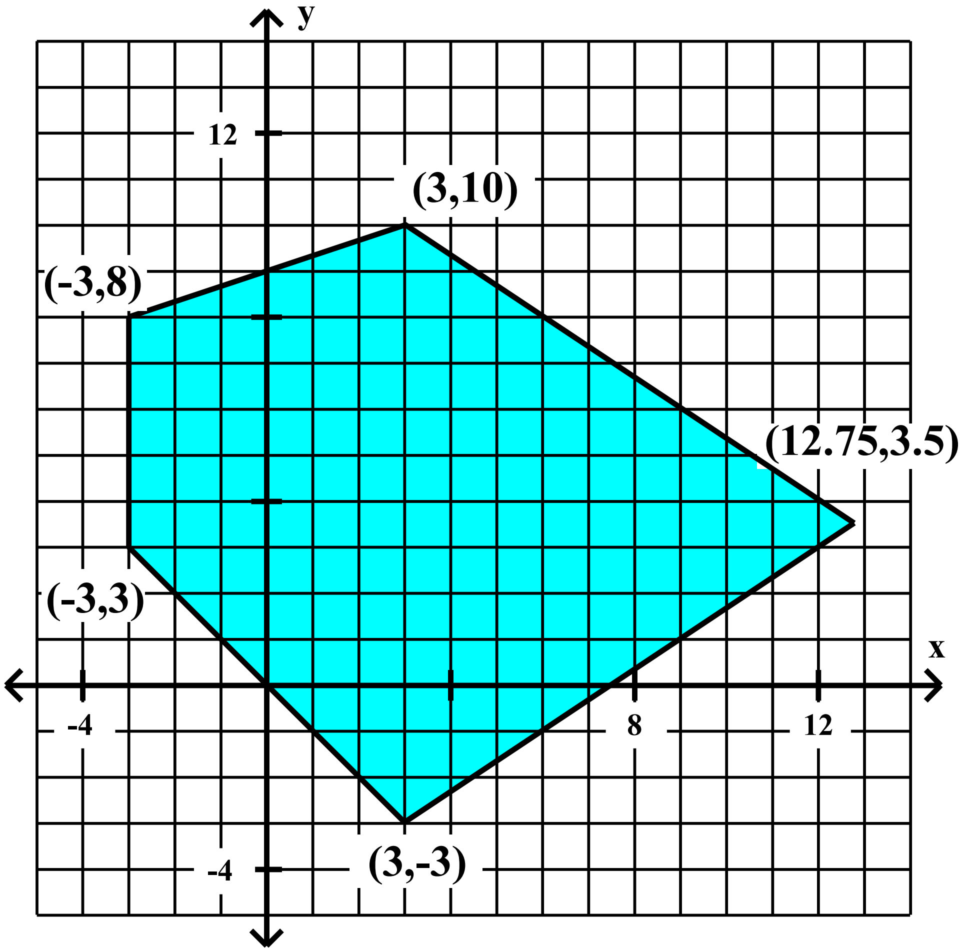
At (-3,8) ⇨ F = -9 + 8 = **-1**

At (-3,3) ⇨ F = -9 + 3 = **-6**

At (3,-3) ⇨ F = 9 + -3 = **6**

Algebra II Class Worksheet #4 Unit 4



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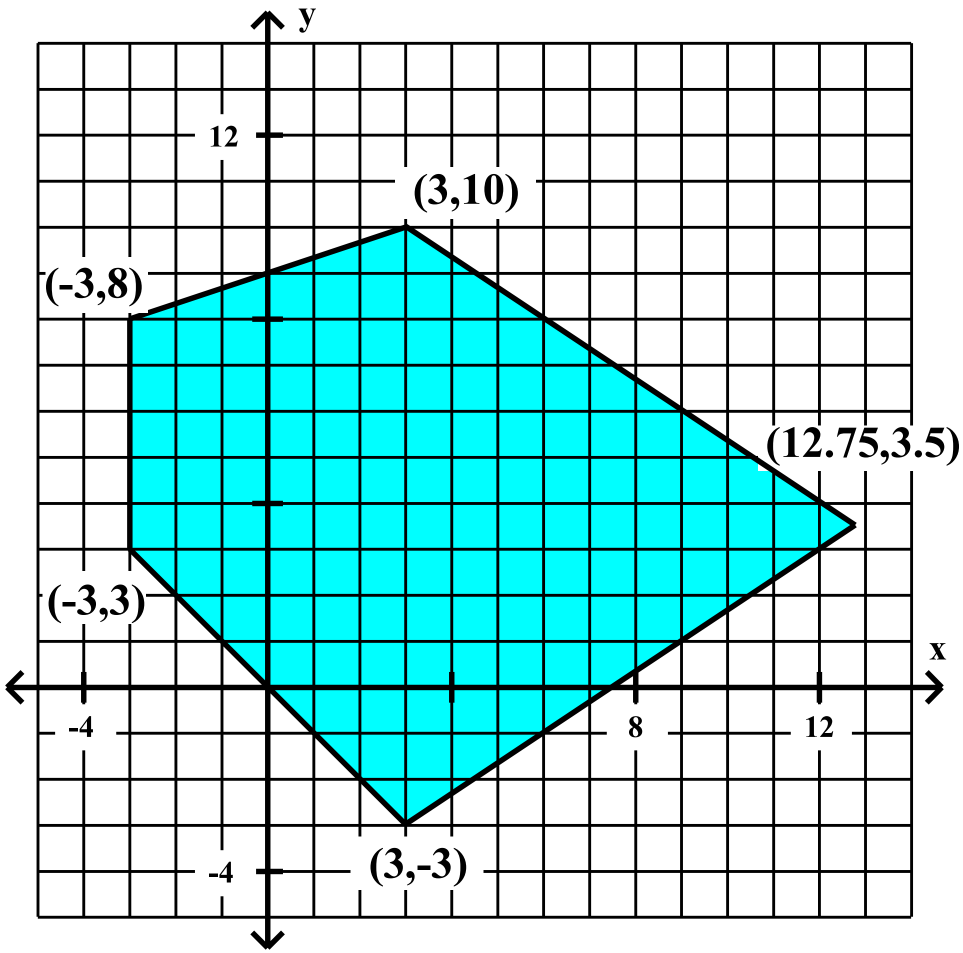
At (-3,8) $\Rightarrow$ F = -9 + 8 = **-1**

At (-3,3) $\Rightarrow$ F = -9 + 3 = **-6**

At (3,-3) $\Rightarrow$ F = 9 + -3 = **6**

At (12.75,3.5) $\Rightarrow$

Algebra II Class Worksheet #4 Unit 4



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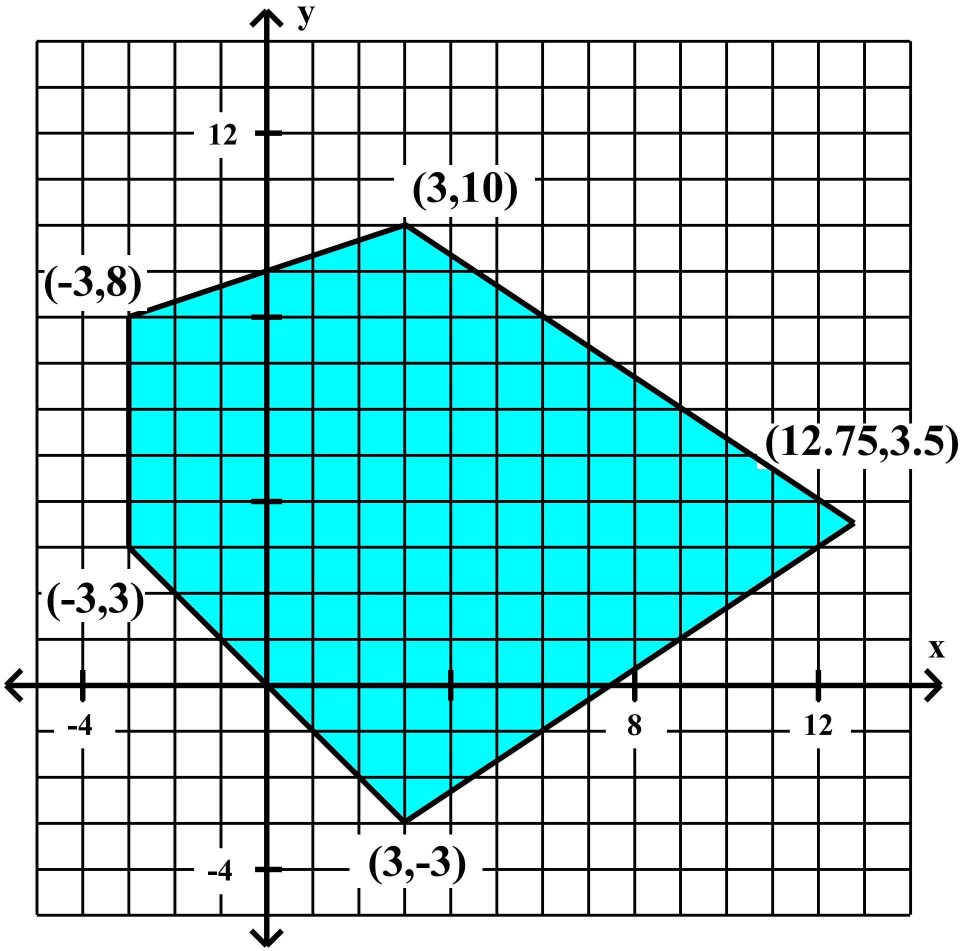
At (-3,8) $\Rightarrow$ F = -9 + 8 = **-1**

At (-3,3) $\Rightarrow$ F = -9 + 3 = **-6**

At (3,-3) $\Rightarrow$ F = 9 + -3 = **6**

At (12.75,3.5) $\Rightarrow$ F =

Algebra II Class Worksheet #4 Unit 4



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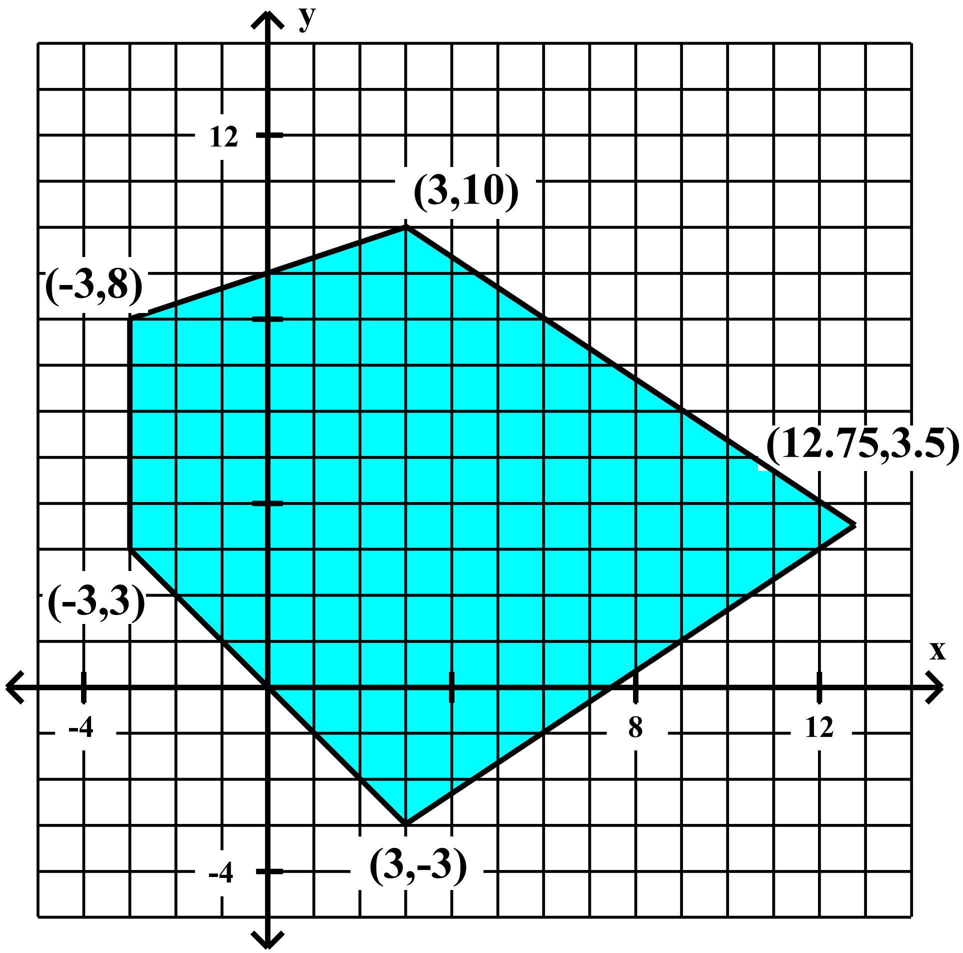
At (-3,8) $\Rightarrow$ $F = -9 + 8 = \mathbf{-1}$

At (-3,3) $\Rightarrow$ $F = -9 + 3 = \mathbf{-6}$

At (3,-3) $\Rightarrow$ $F = 9 + -3 = \mathbf{6}$

At (12.75,3.5) $\Rightarrow$ $F = 38.25$

Algebra II Class Worksheet #4 Unit 4



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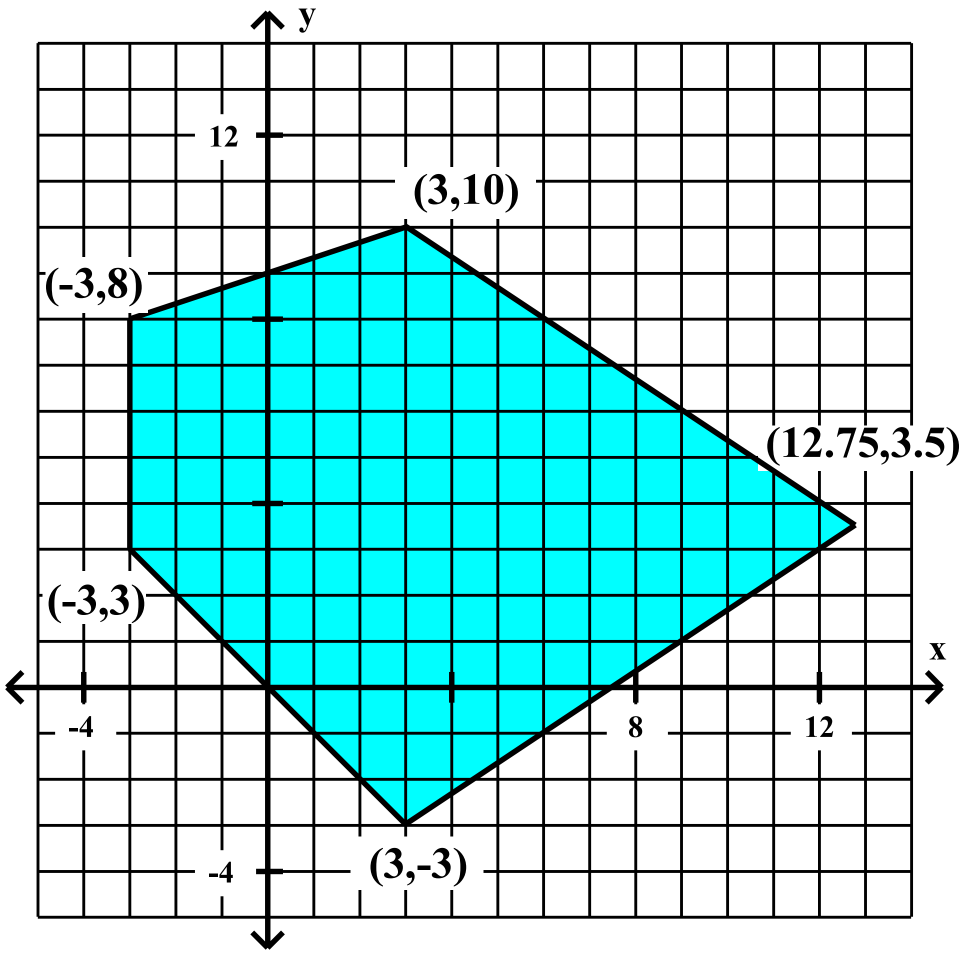
At (-3,3) $\Rightarrow$ $F = -9 + 3 =$ **-6**

At (3,-3) $\Rightarrow$ $F = 9 + -3 =$ **6**

At (12.75,3.5) $\Rightarrow$ $F = 38.25 +$

Algebra II Class Worksheet #4 Unit 4



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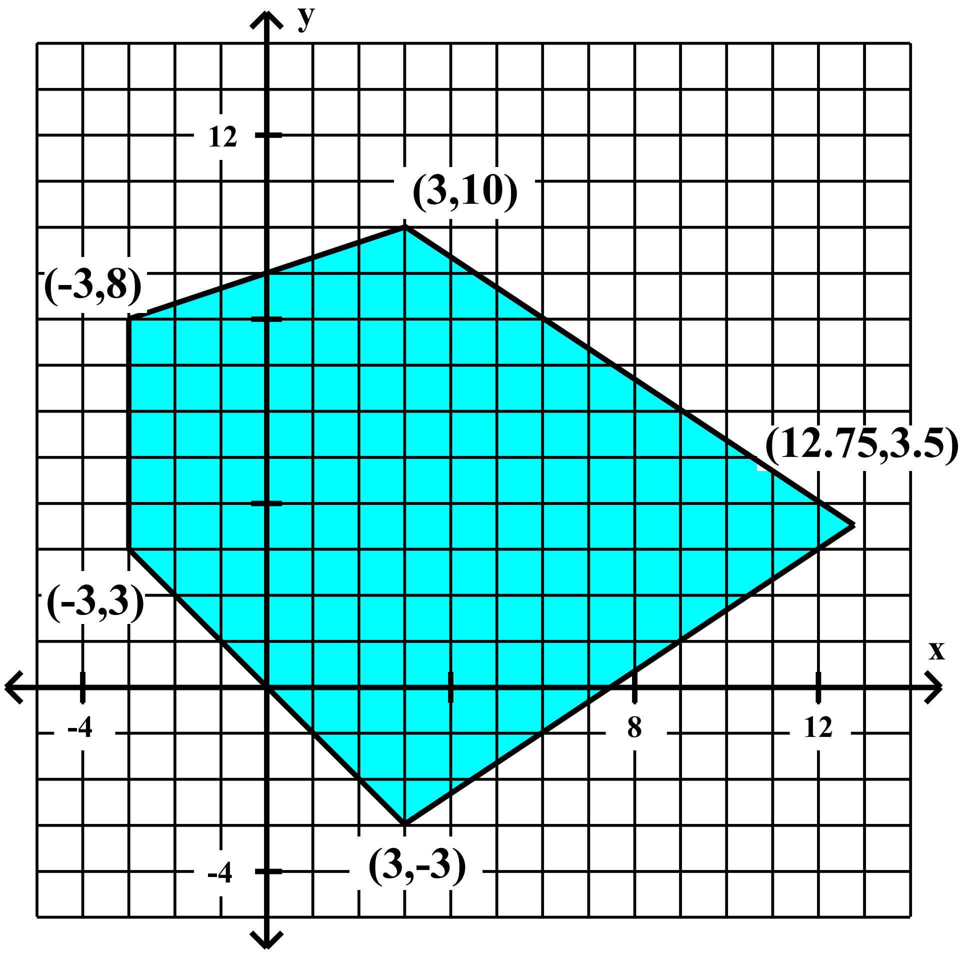
At (3,-3) $\Longrightarrow$ F = 9 + -3 = **6**

At (12.75,3.5) $\Longrightarrow$ F = 38.25 + 3.5

Algebra II Class Worksheet #4 Unit 4



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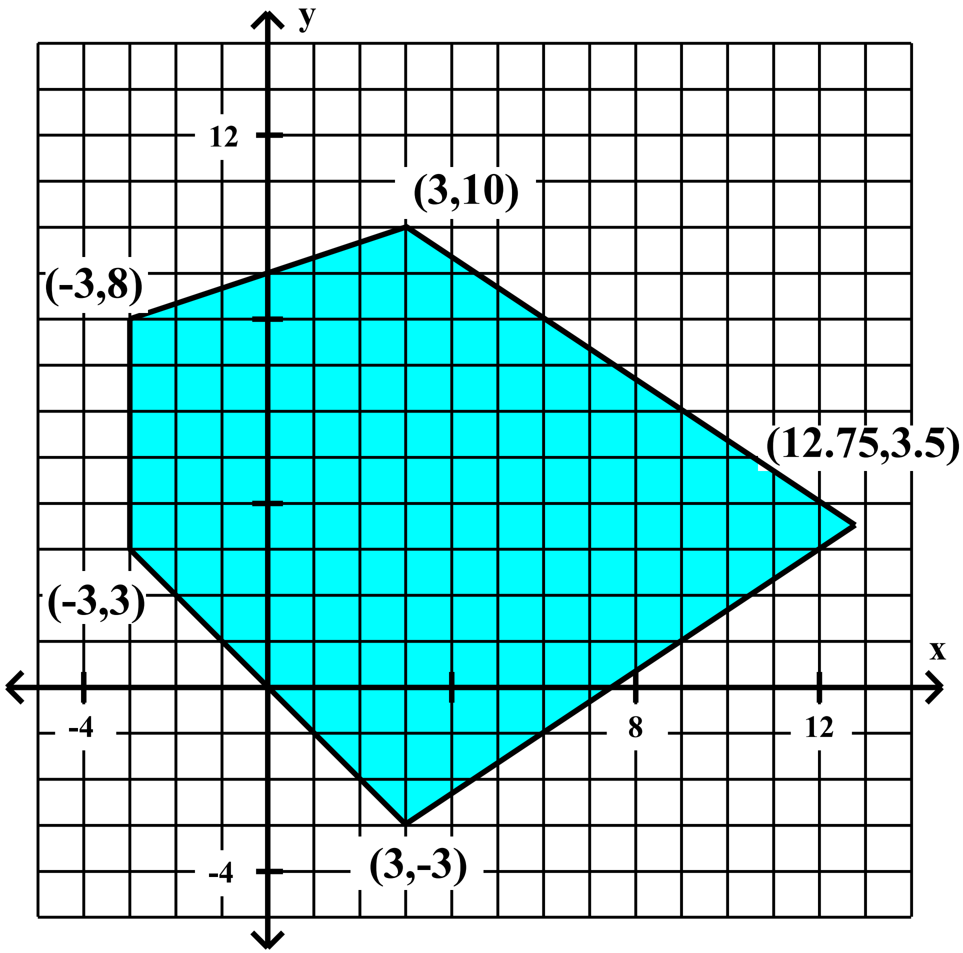
At (3,-3) ⇨ F = 9 + -3 = **6**

At (12.75,3.5) ⇨ F = 38.25 + 3.5 =

Algebra II Class Worksheet #4 Unit 4



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7. $F = 3x + y$

F_{max} = ______ at ________

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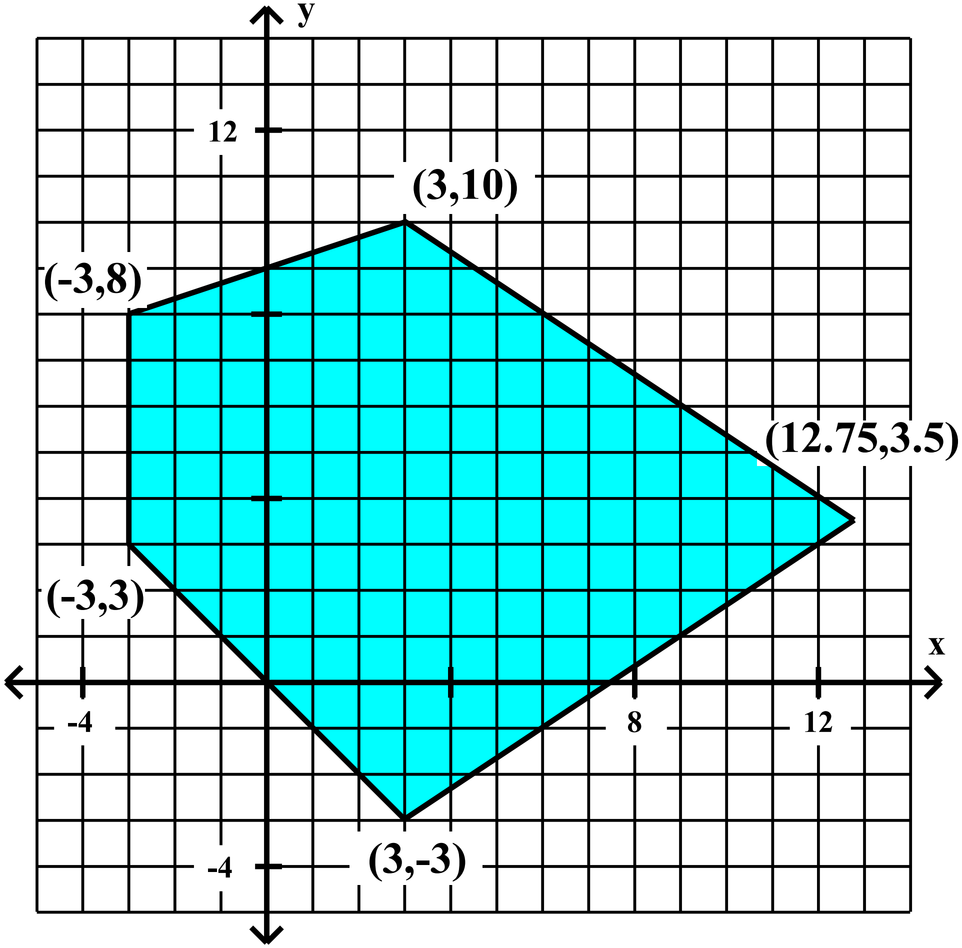

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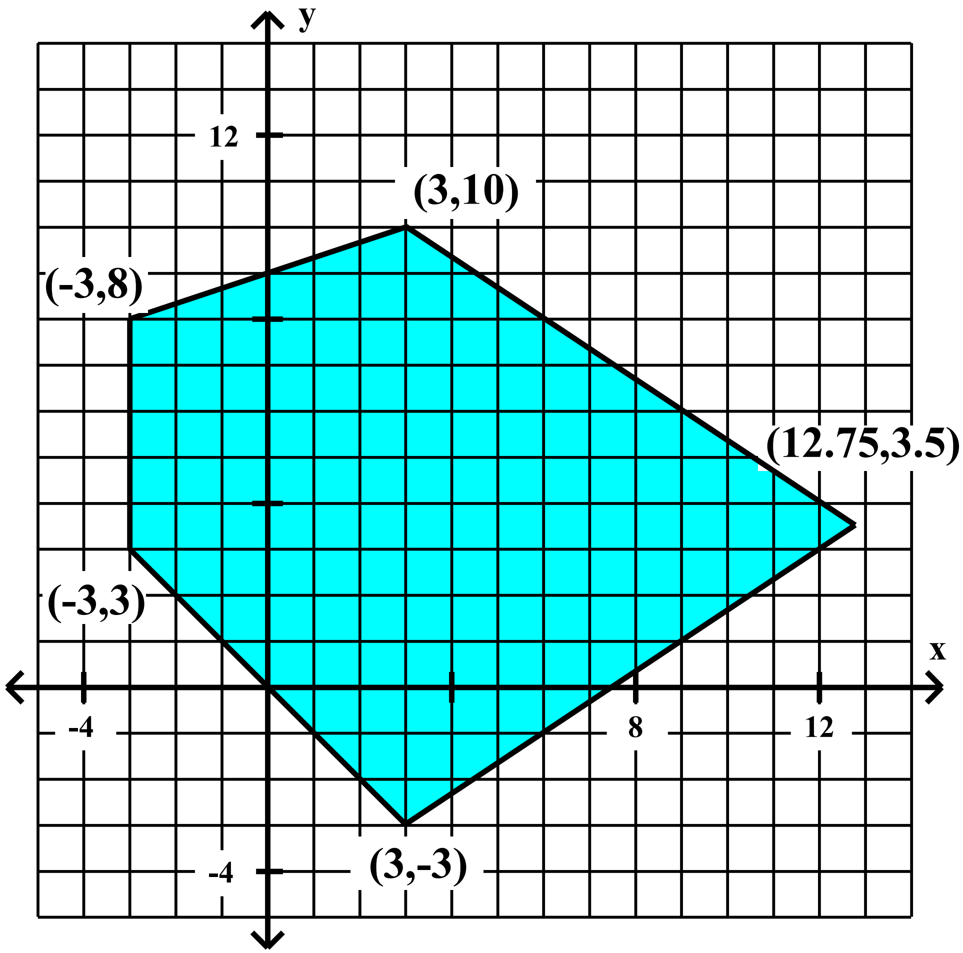

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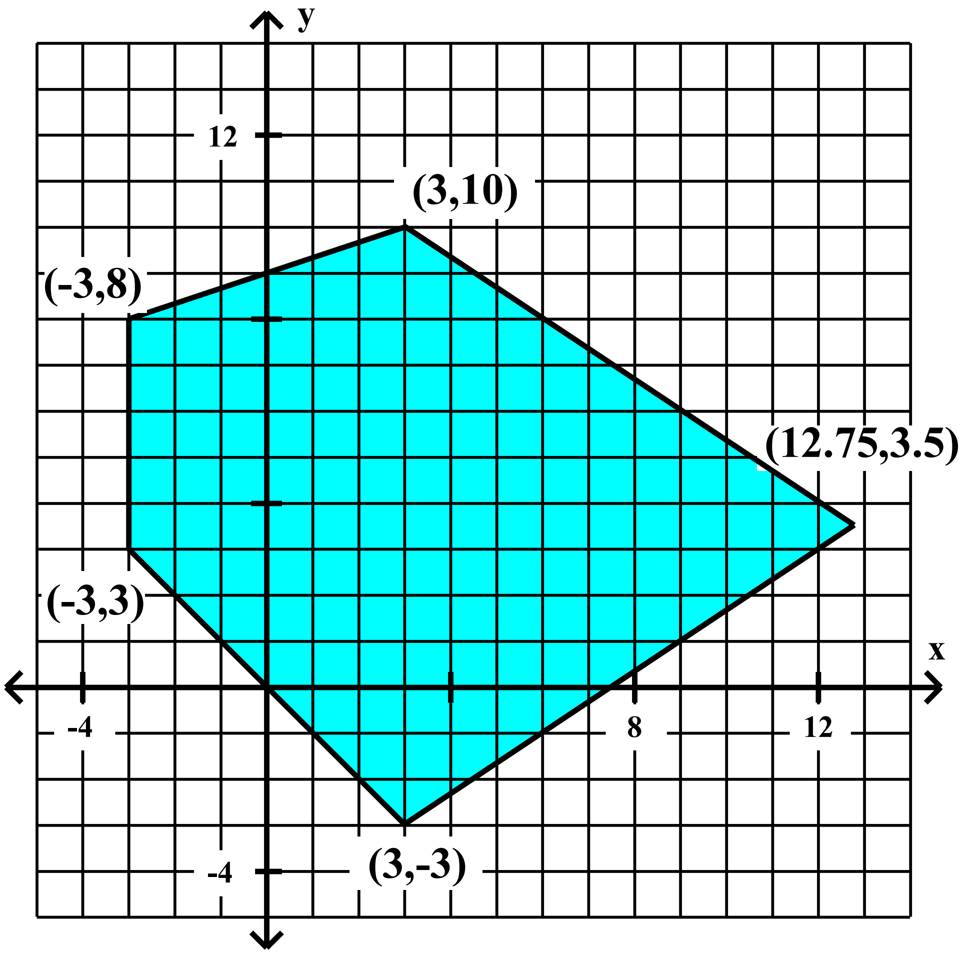

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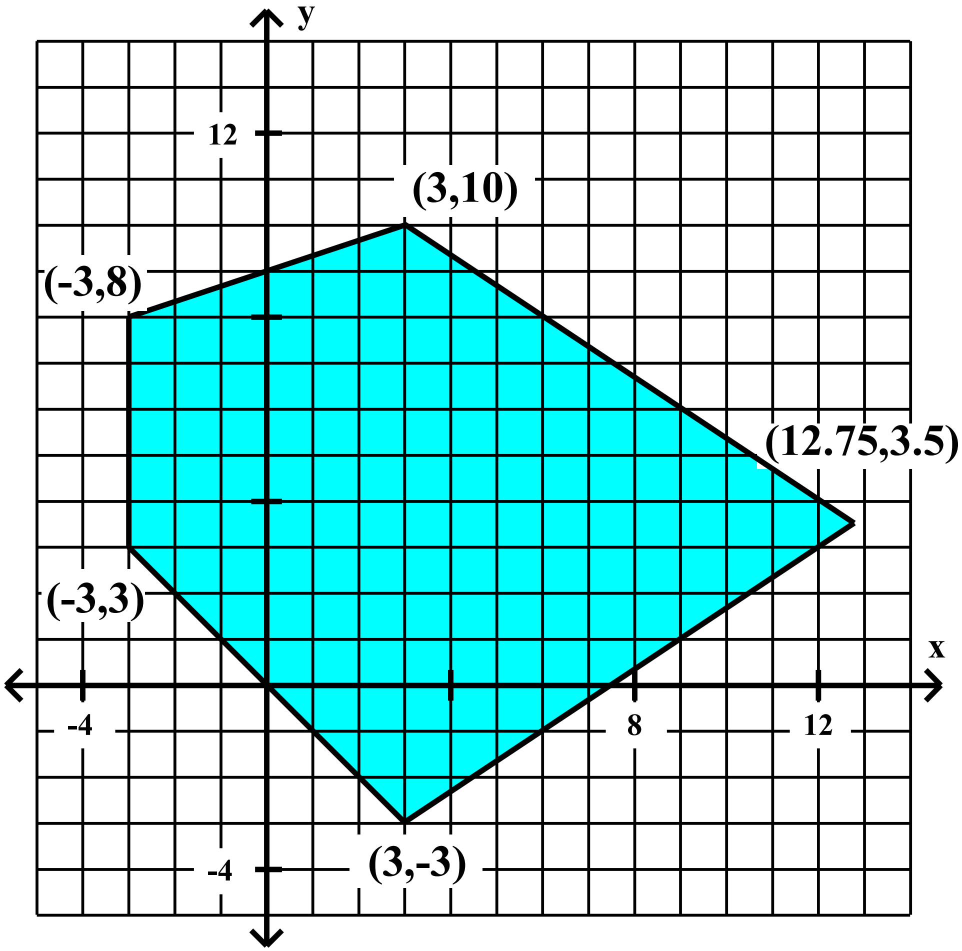

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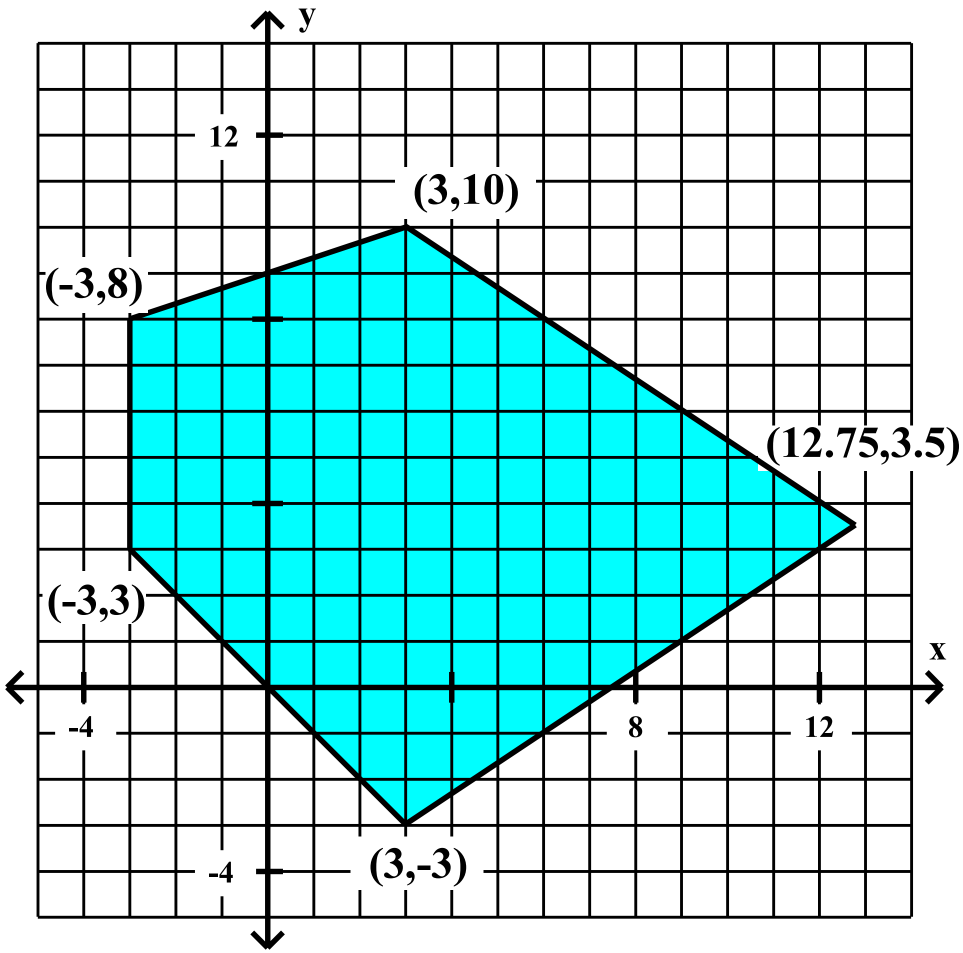

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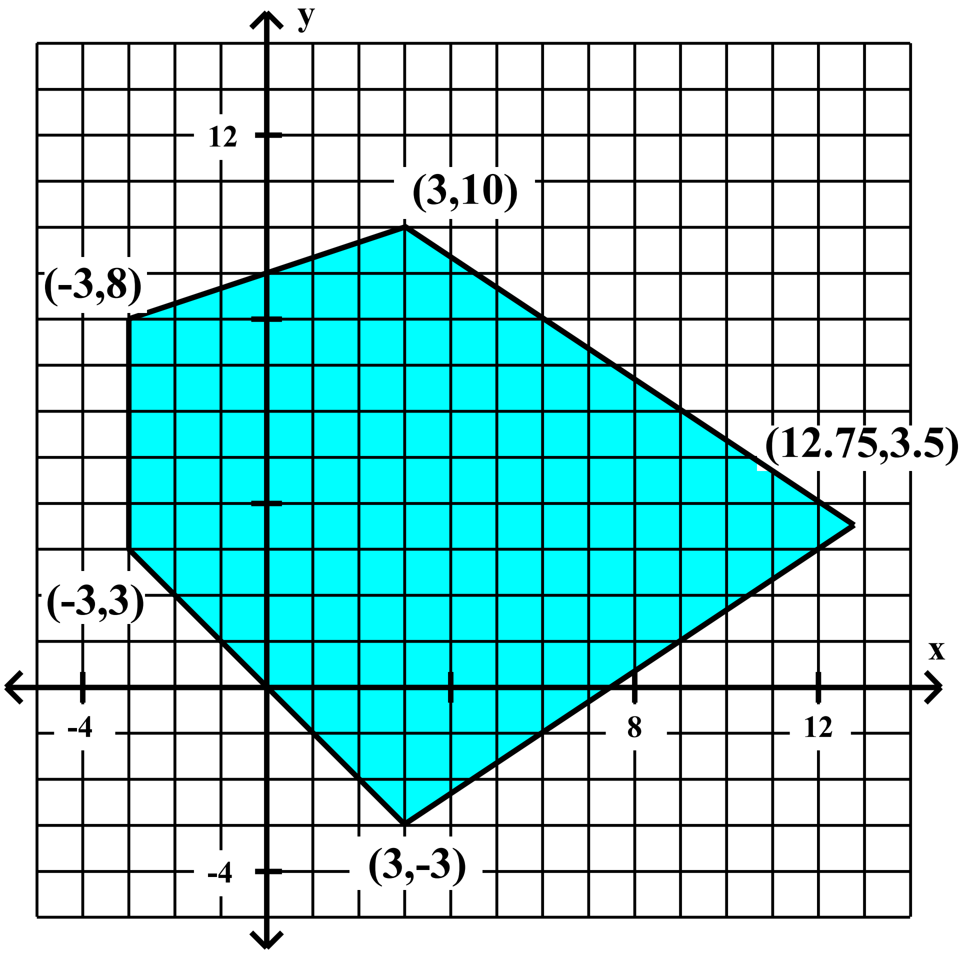

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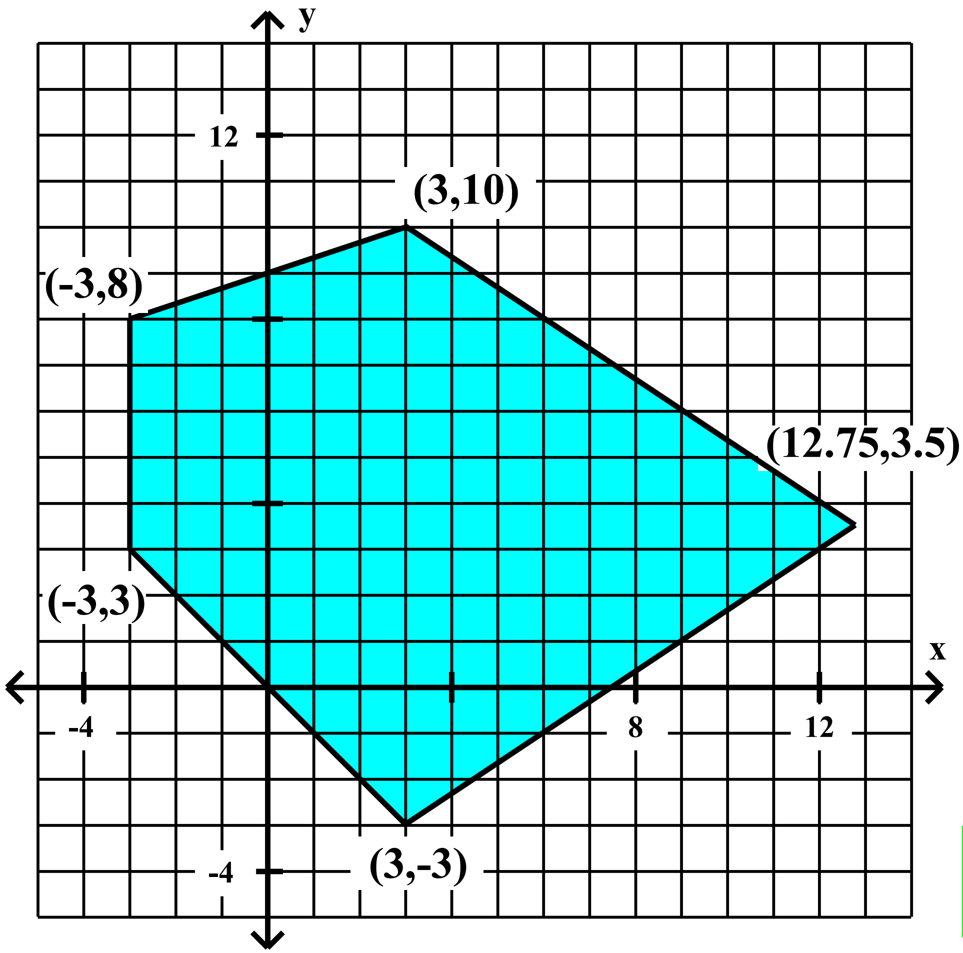

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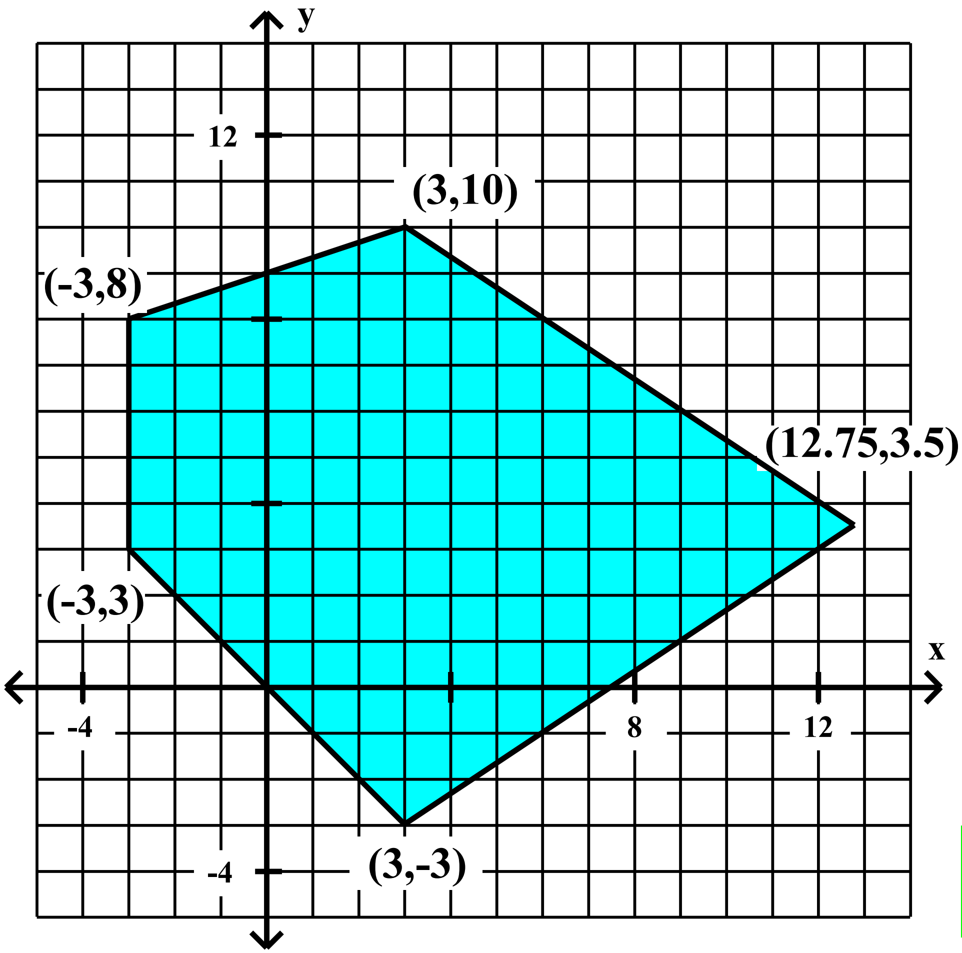

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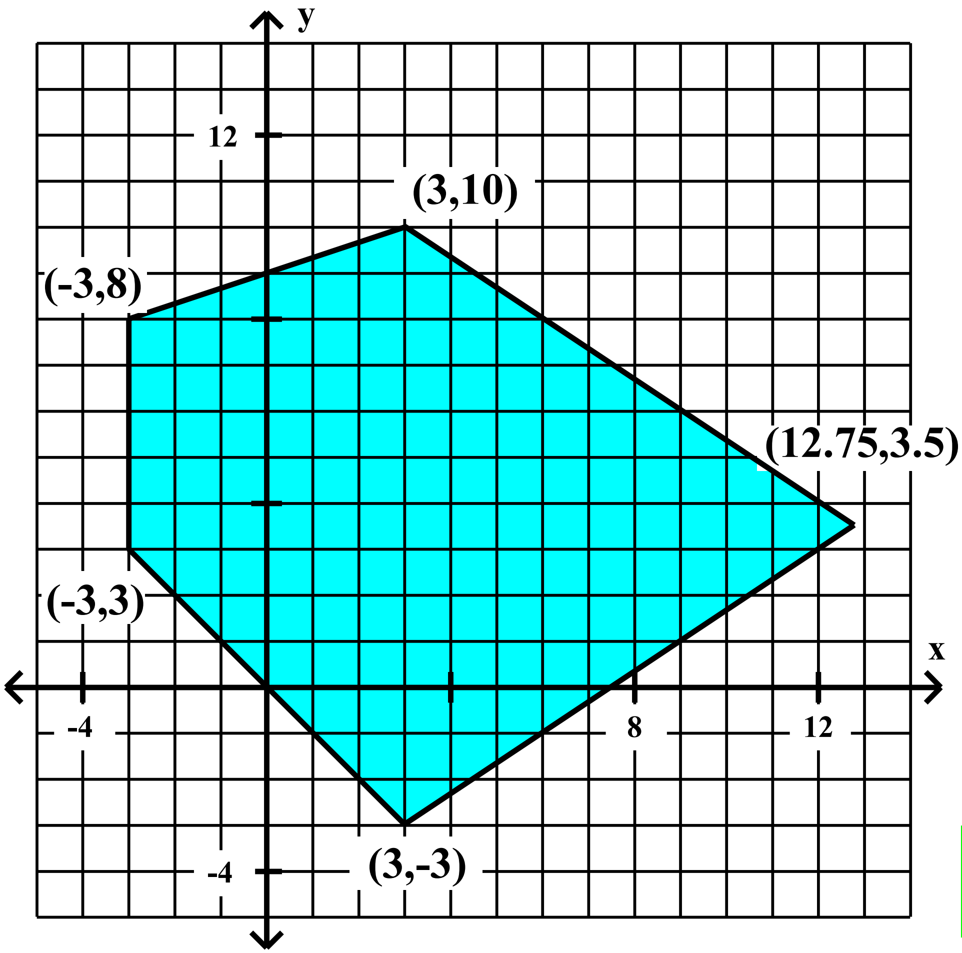

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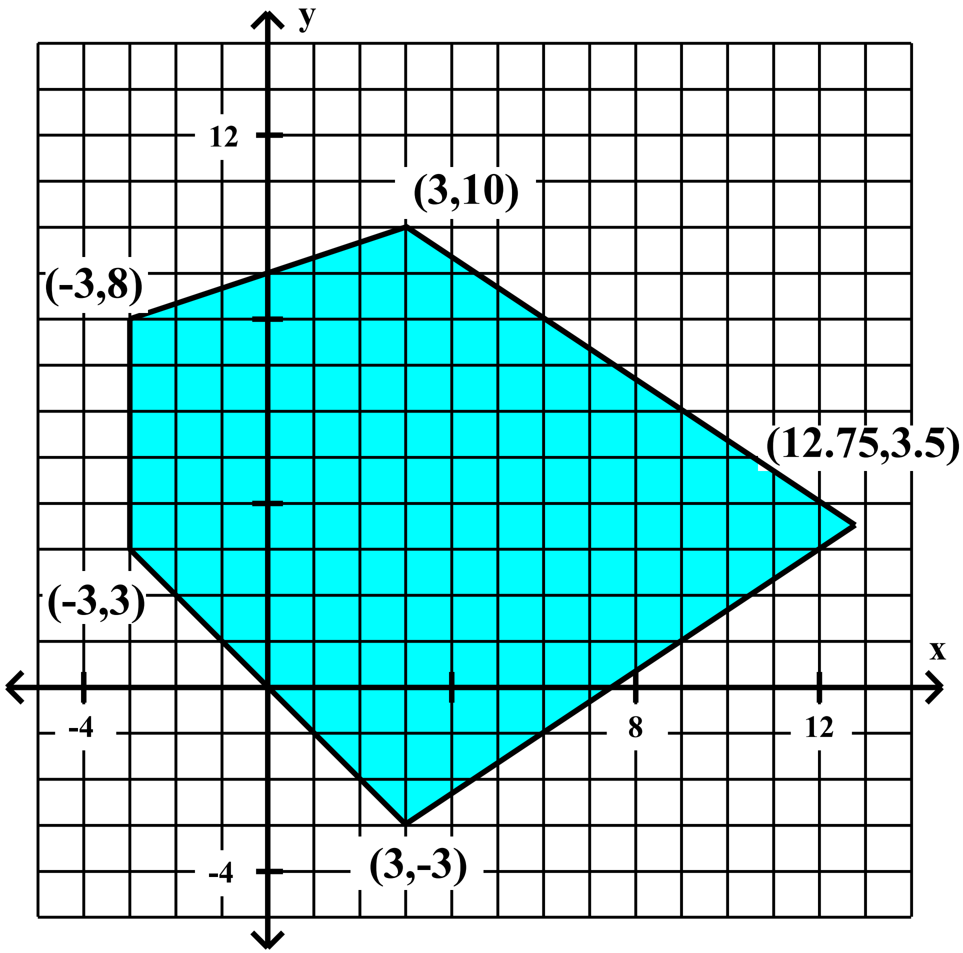

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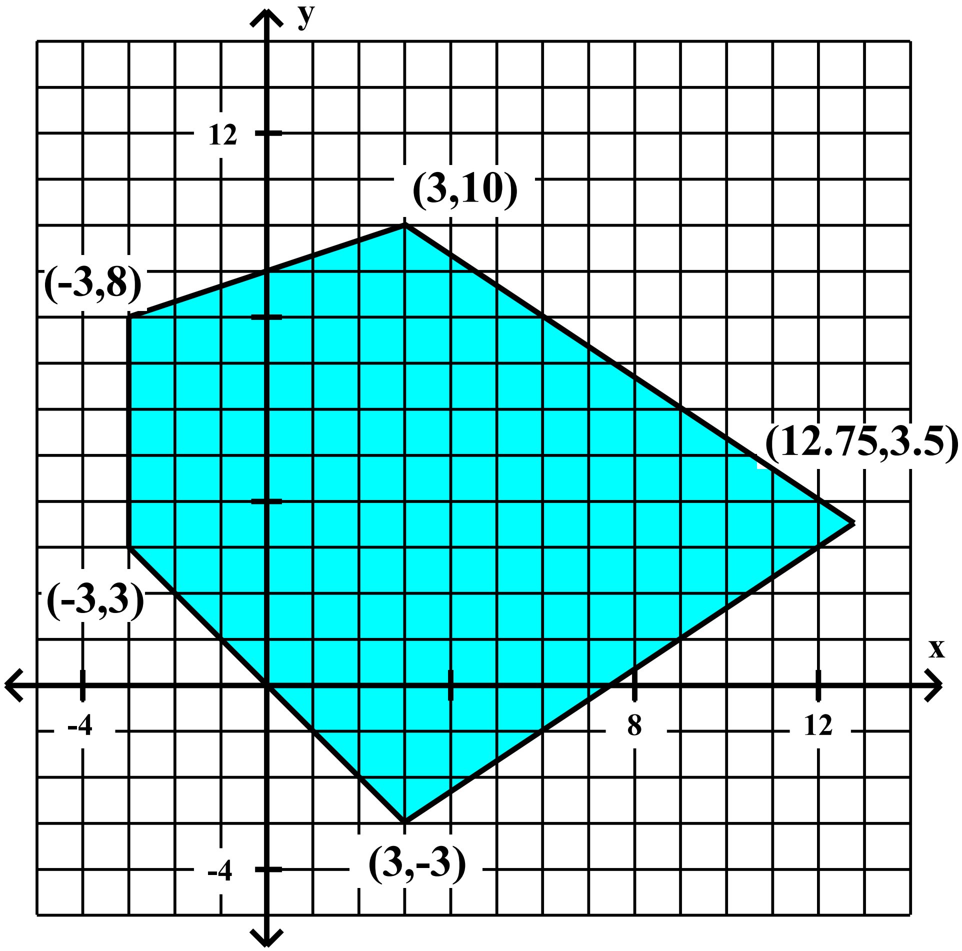
Algebra II   Class Worksheet #4   Unit 4



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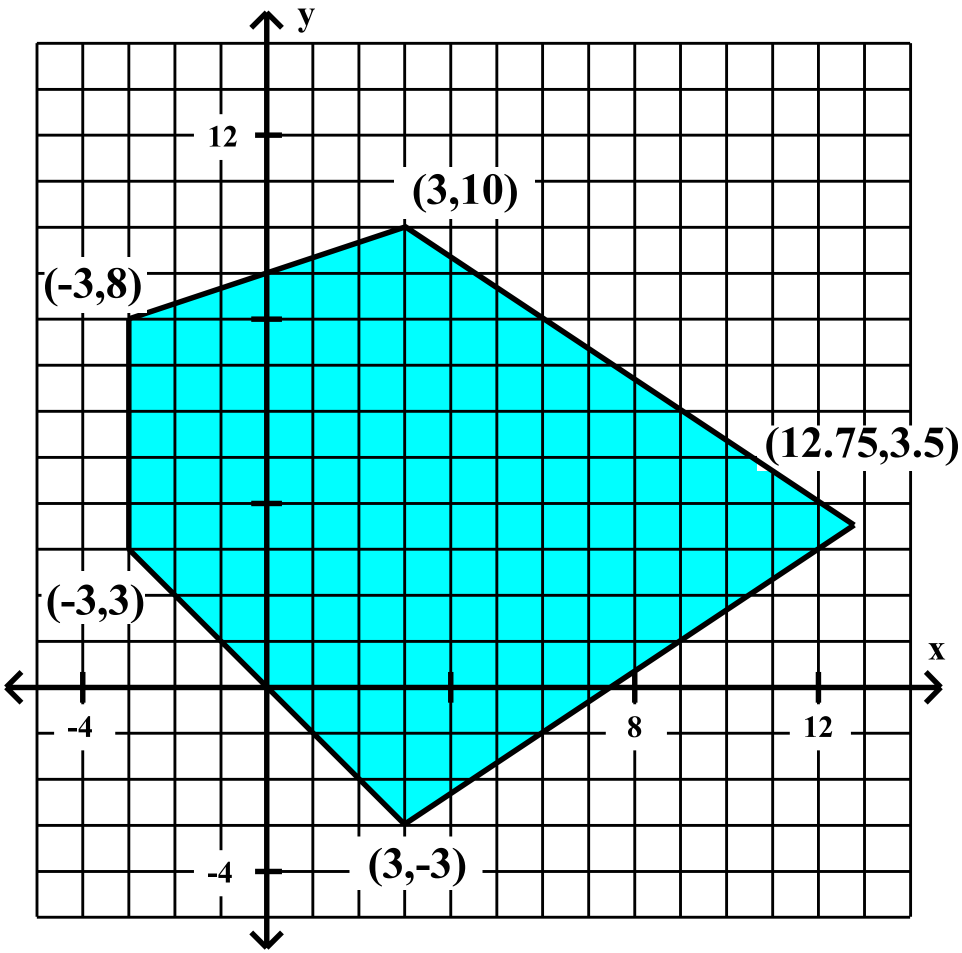
Algebra II Class Worksheet #4 Unit 4



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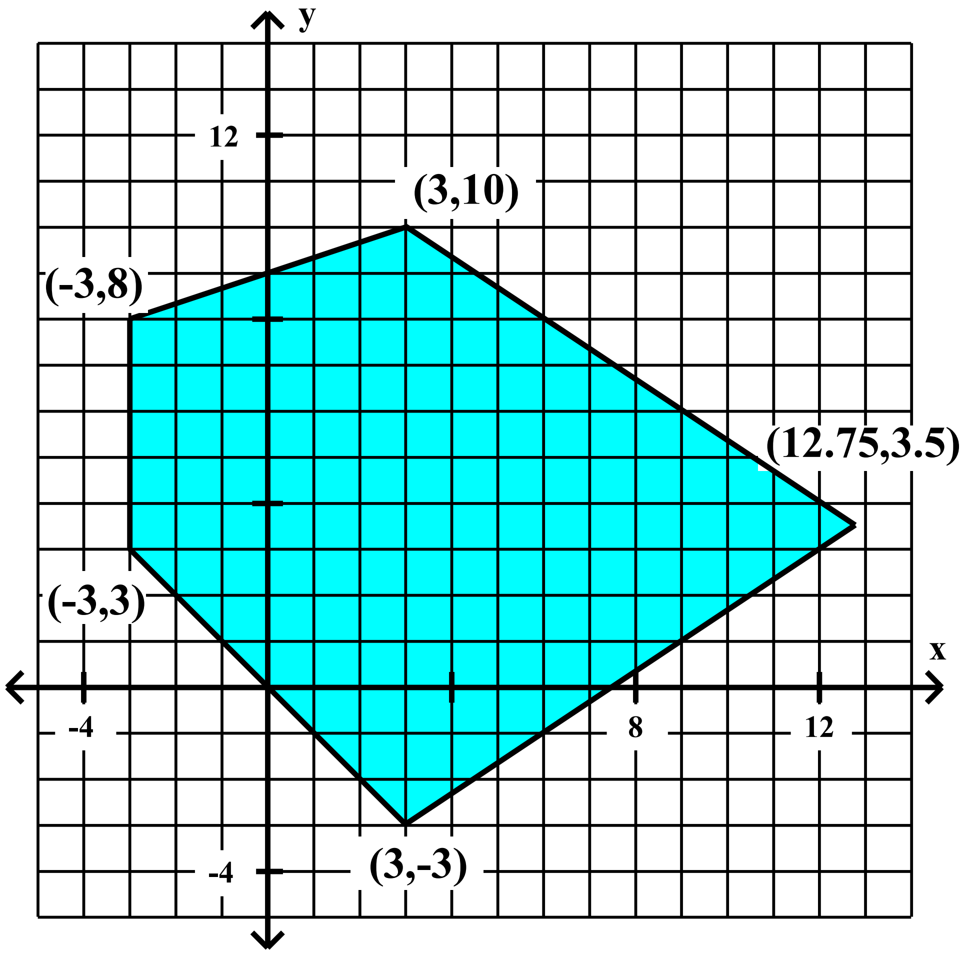

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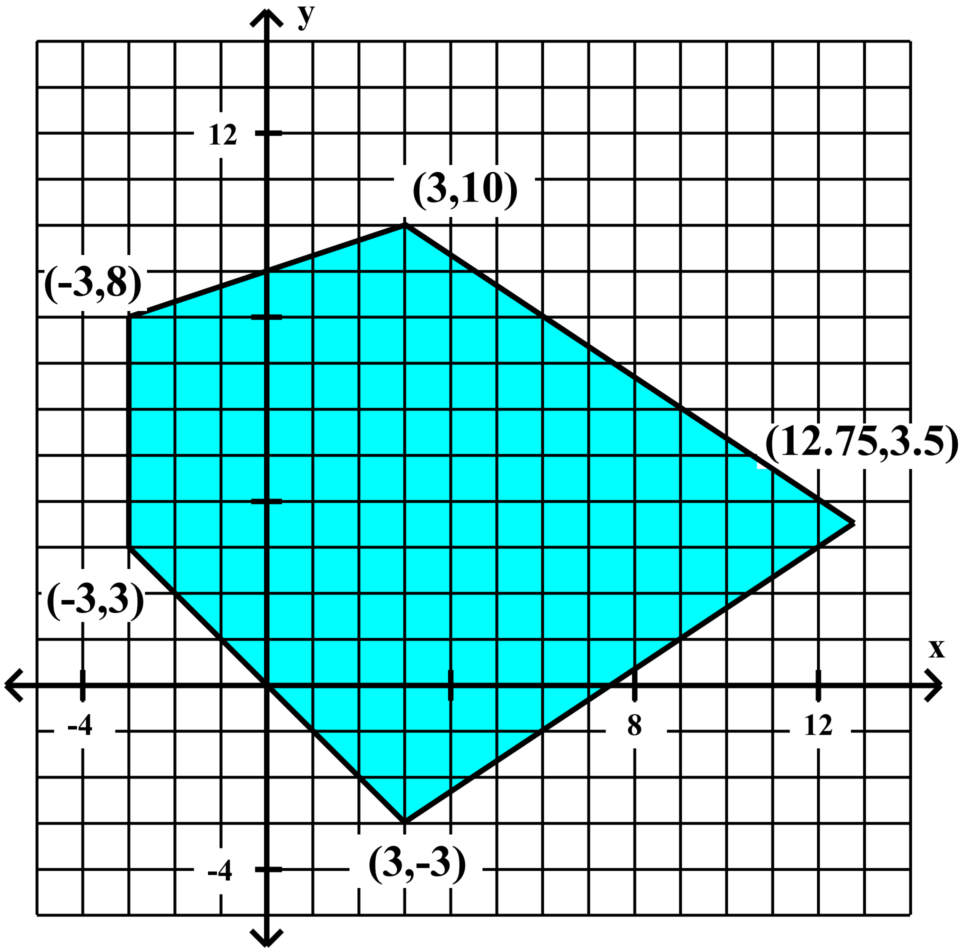
At (3,10)

Algebra II Class Worksheet #4 Unit 4



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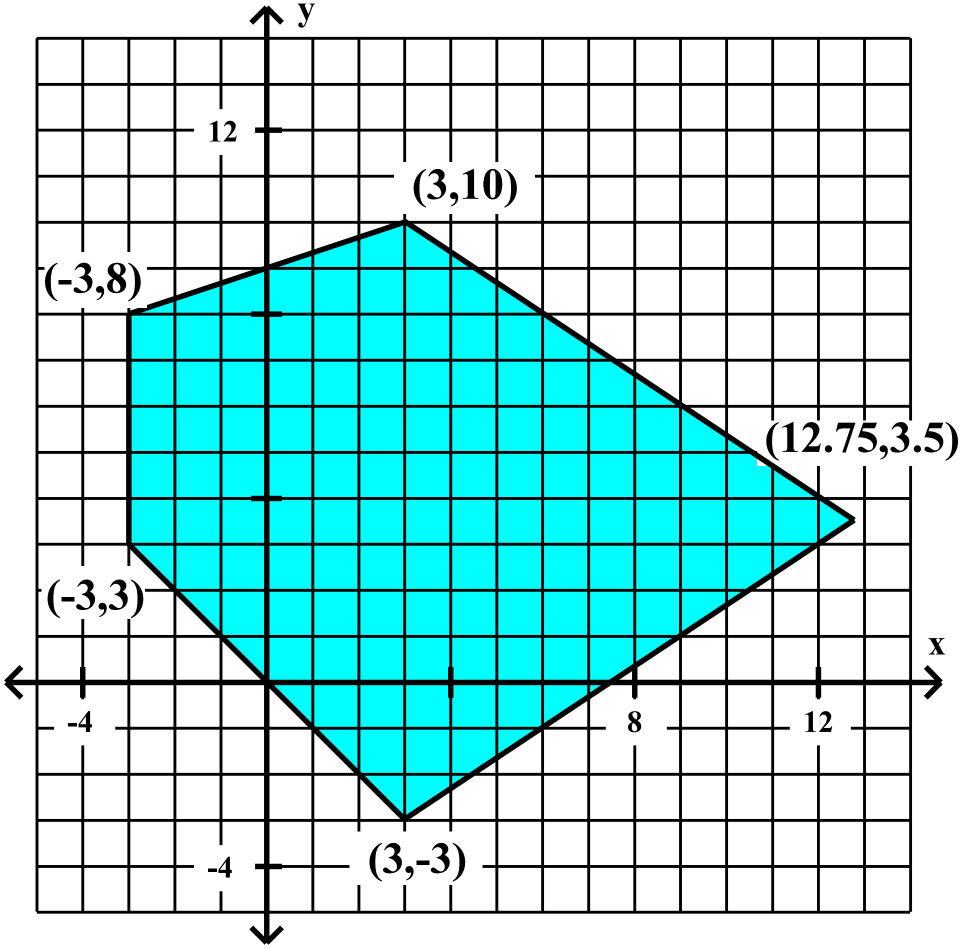
8. $F = 4x - 2y$

F_{max} = ______ at _________

F_{min} = ______ at _________

At (3,10) $\Longrightarrow$ F =

Algebra II Class Worksheet #4 Unit 4



The **maximum** and the **minimum** values of F will occur at a vertex of the region.

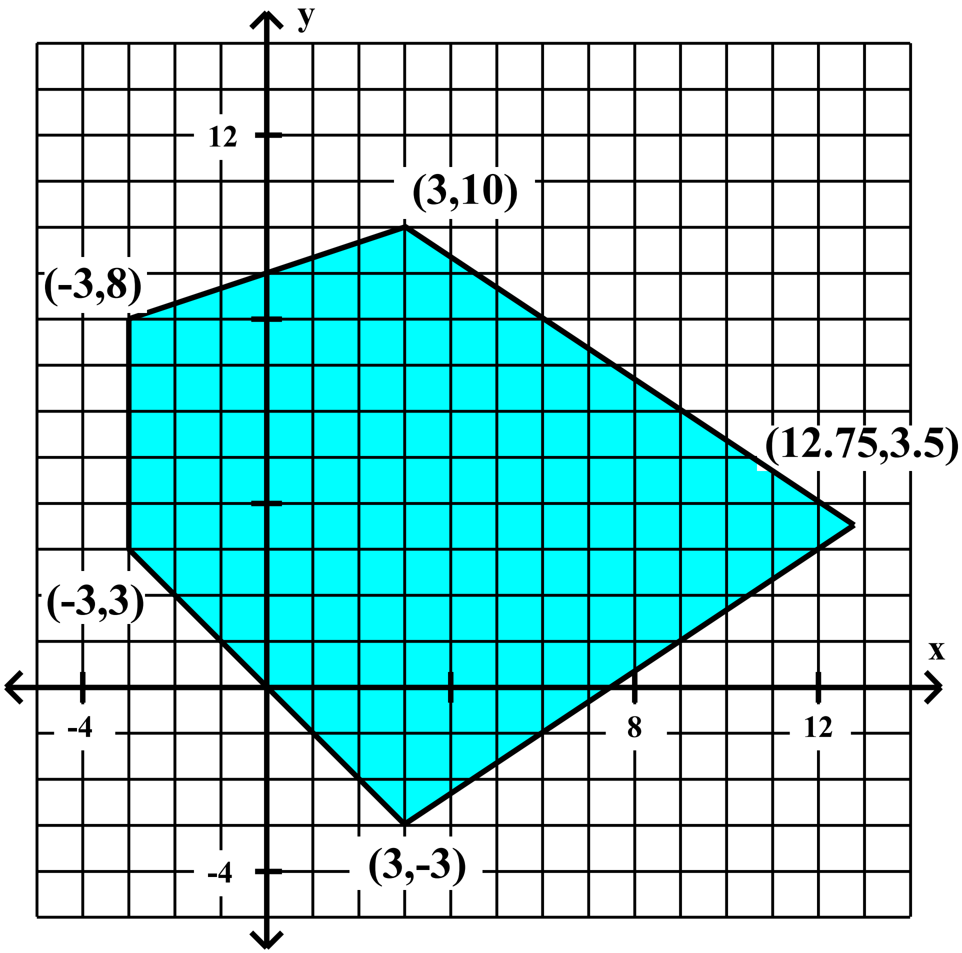
8. $F = 4x - 2y$

F_{max} = ______ at ________

F_{min} = ______ at ________

At (3,10) $\Rightarrow$ F = 12

Algebra II Class Worksheet #4 Unit 4



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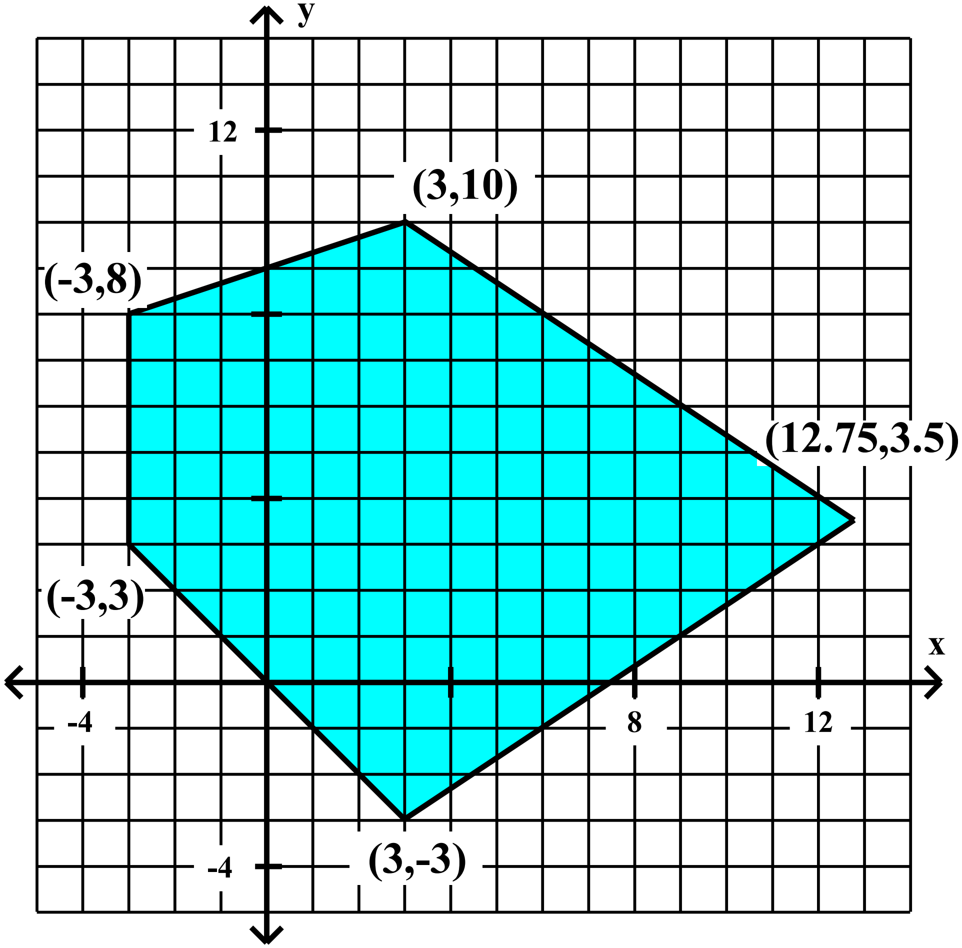
At (3,10) $\Longrightarrow$ F = 12 –

Algebra II Class Worksheet #4 Unit 4



The **maximum** and the **minimum** values of F will occur at a vertex of the region.

8. $F = 4x - 2y$

F_{max} = ______ at _________

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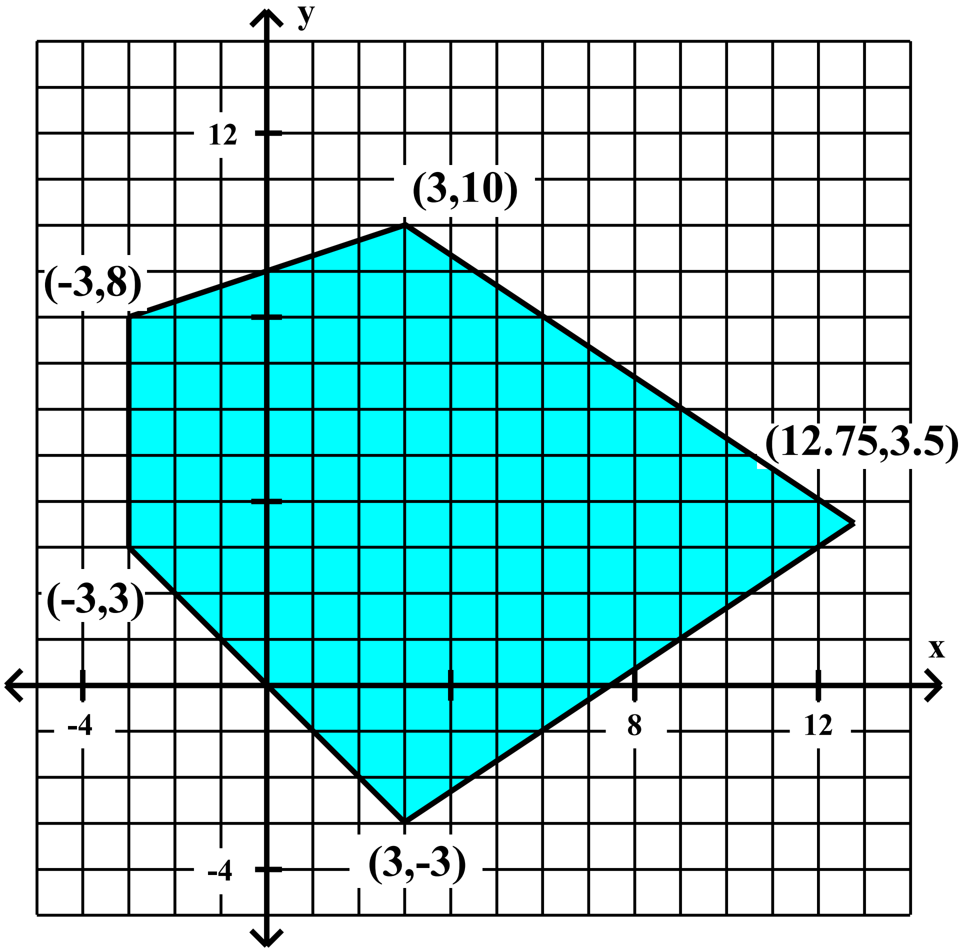
At (3,10) $\Rightarrow$ $F = 12 - 20$

Algebra II Class Worksheet #4 Unit 4



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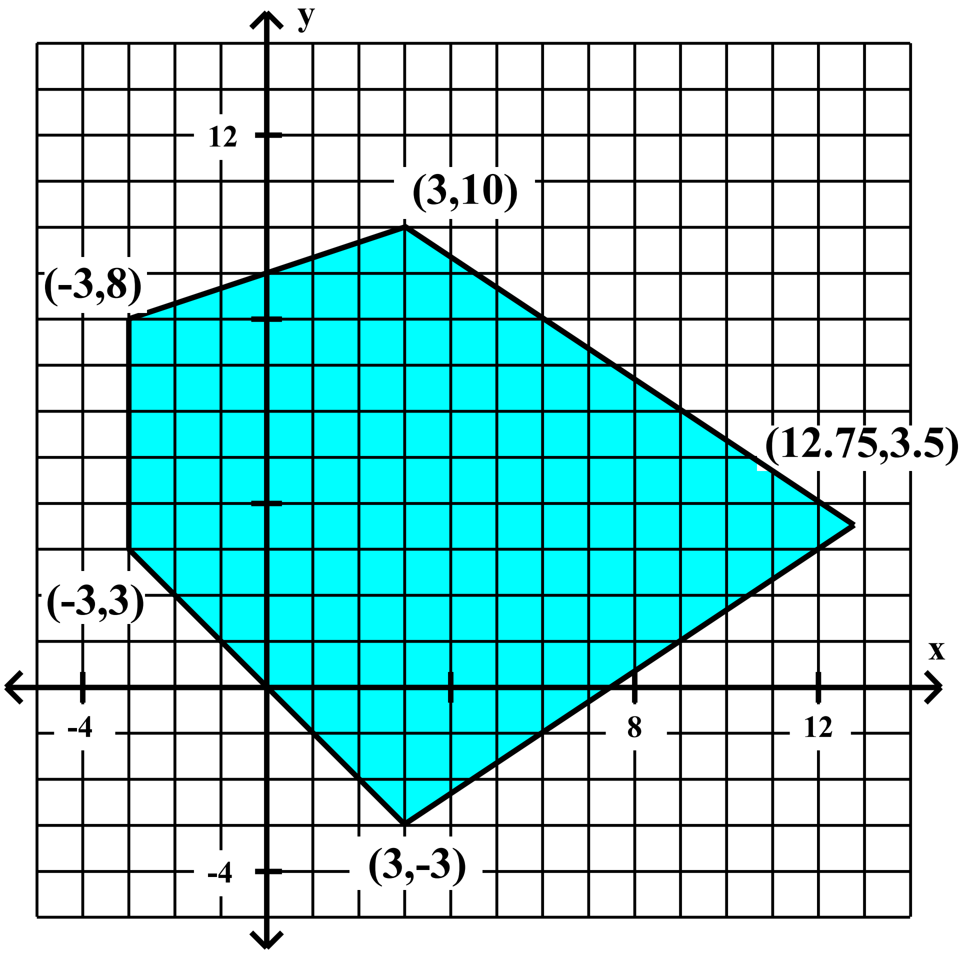
Algebra II Class Worksheet #4 Unit 4



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8. $F = 4x - 2y$

F_{max} = ______ at ________

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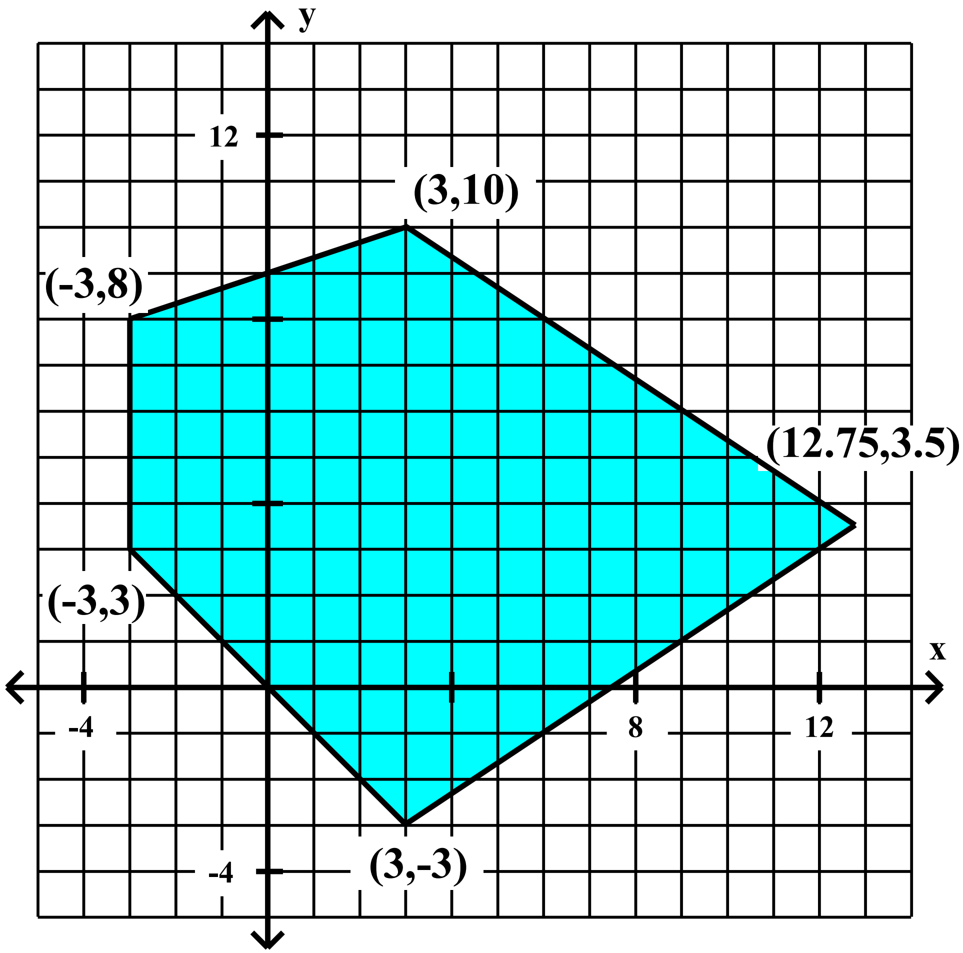
At (3,10) $\Rightarrow$ $F = 12 - 20 =$ **-8**

Algebra II Class Worksheet #4 Unit 4



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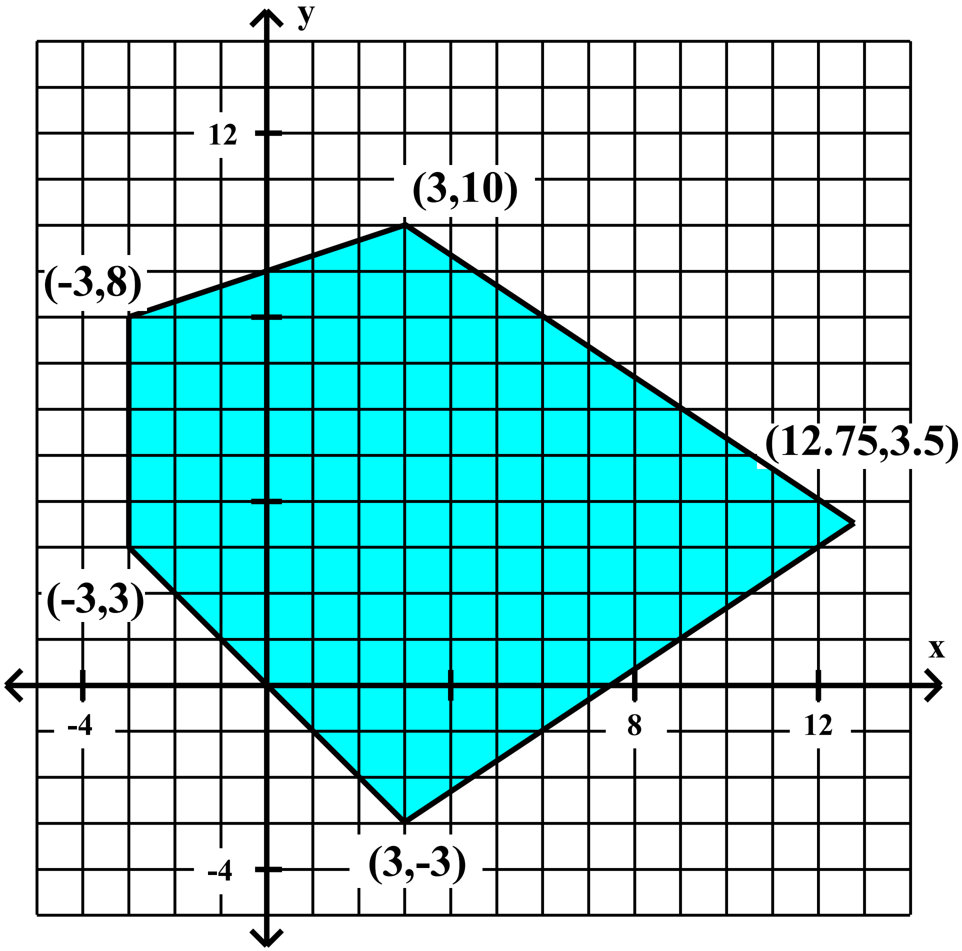
At (-3,8)

Algebra II Class Worksheet #4 Unit 4



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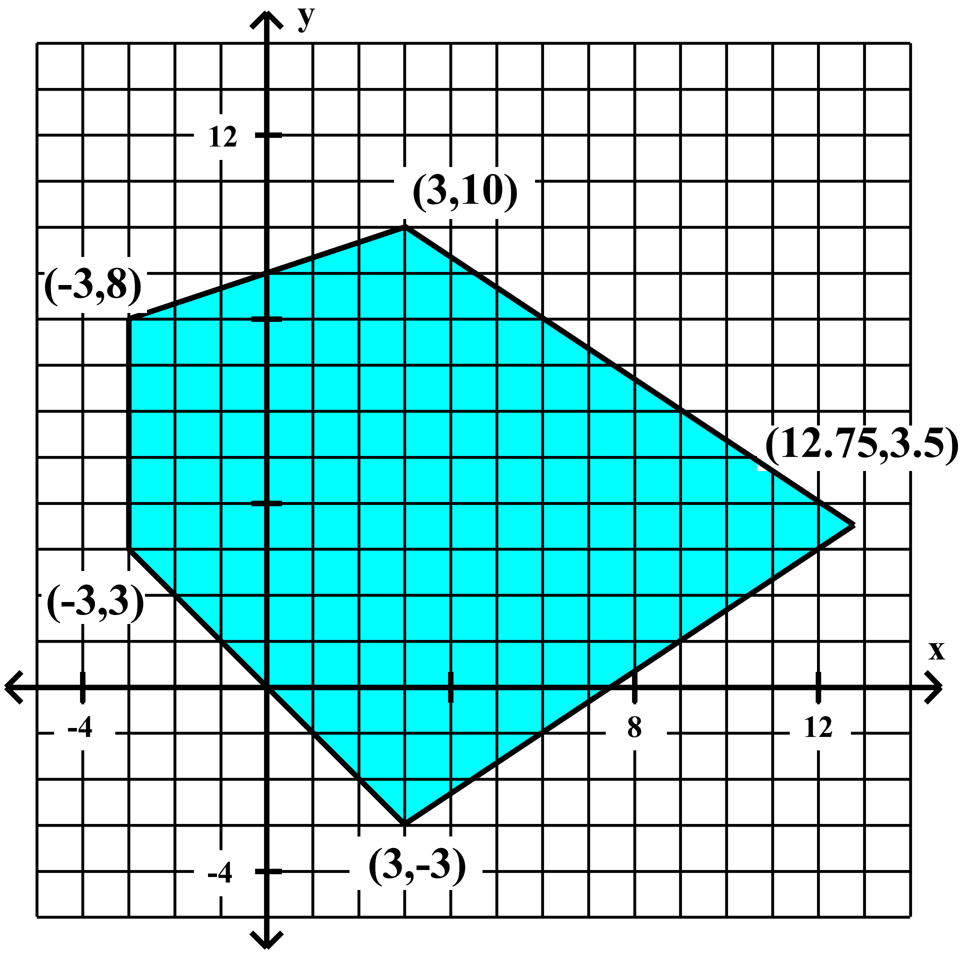

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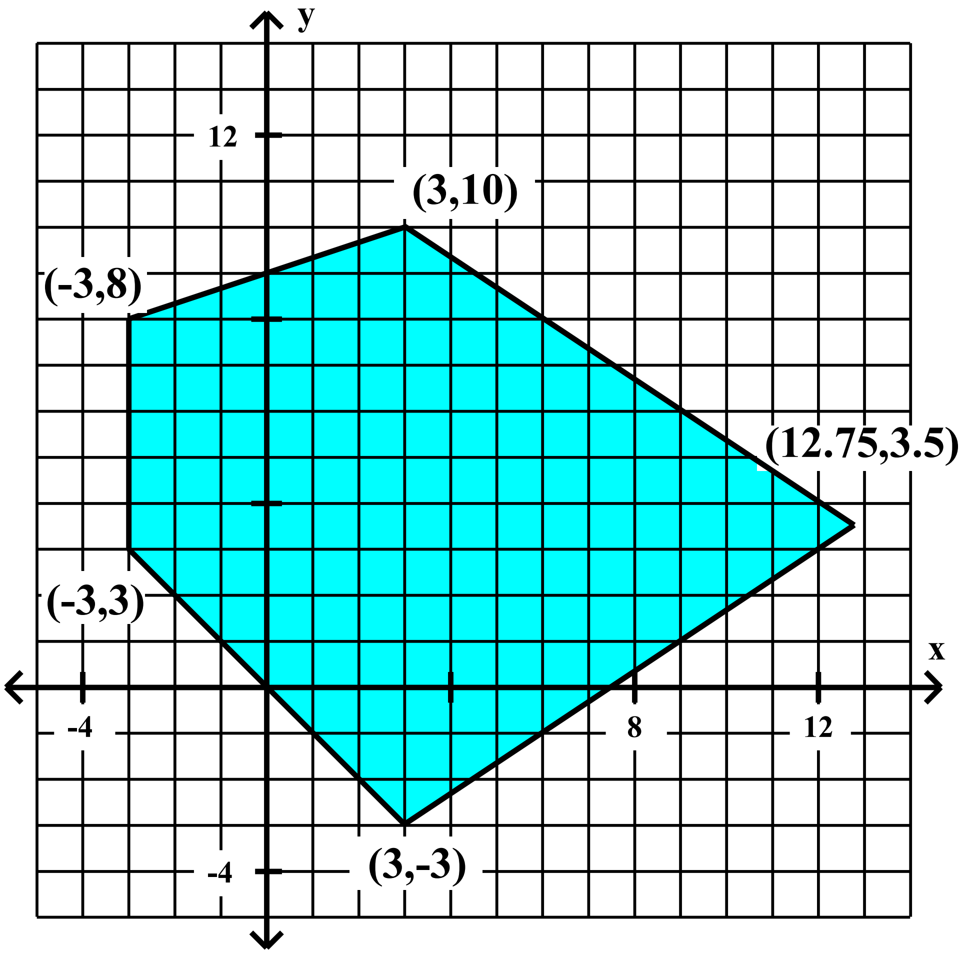

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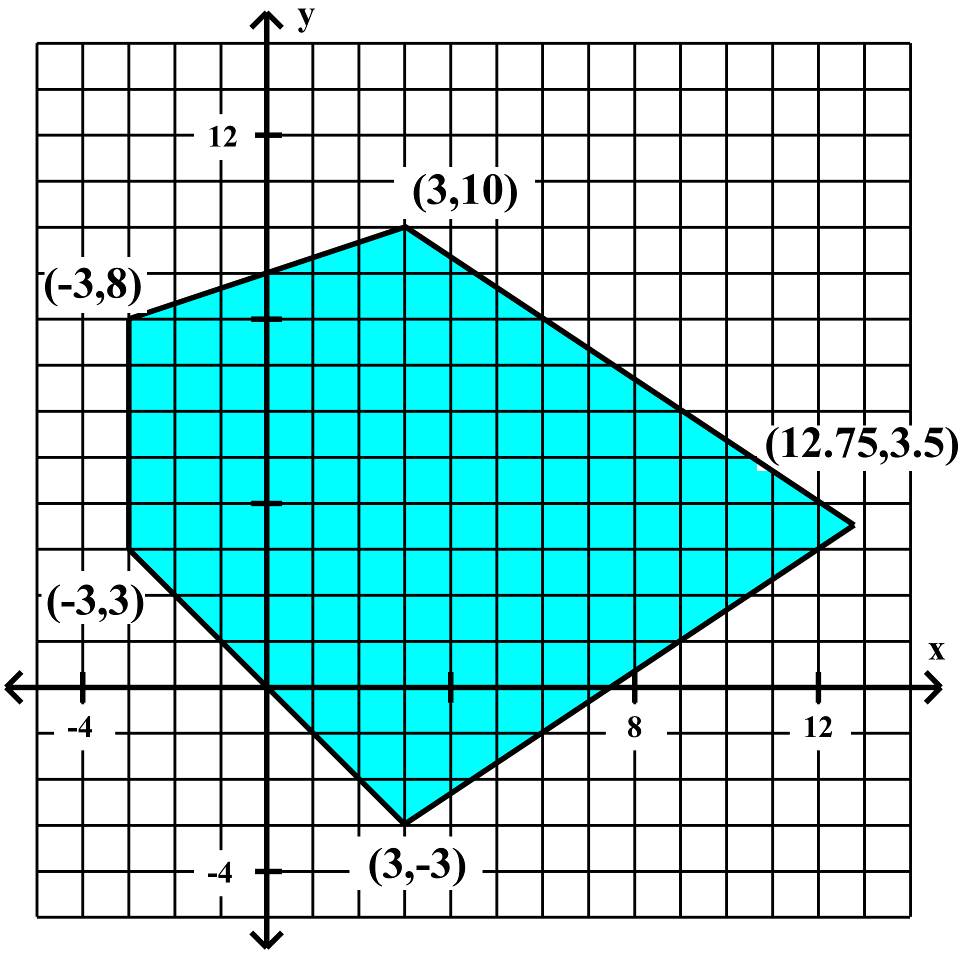

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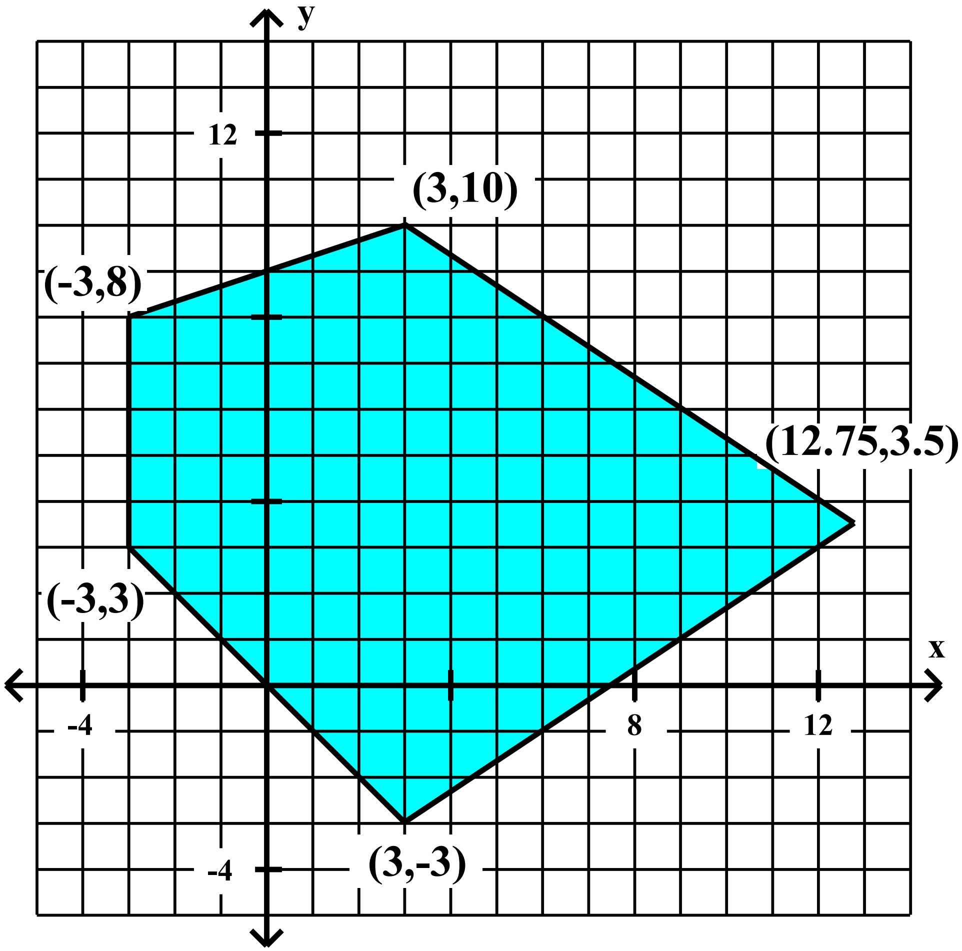
At (-3,8) ⇨ $F = -12 - 16$

Algebra II Class Worksheet #4 Unit 4



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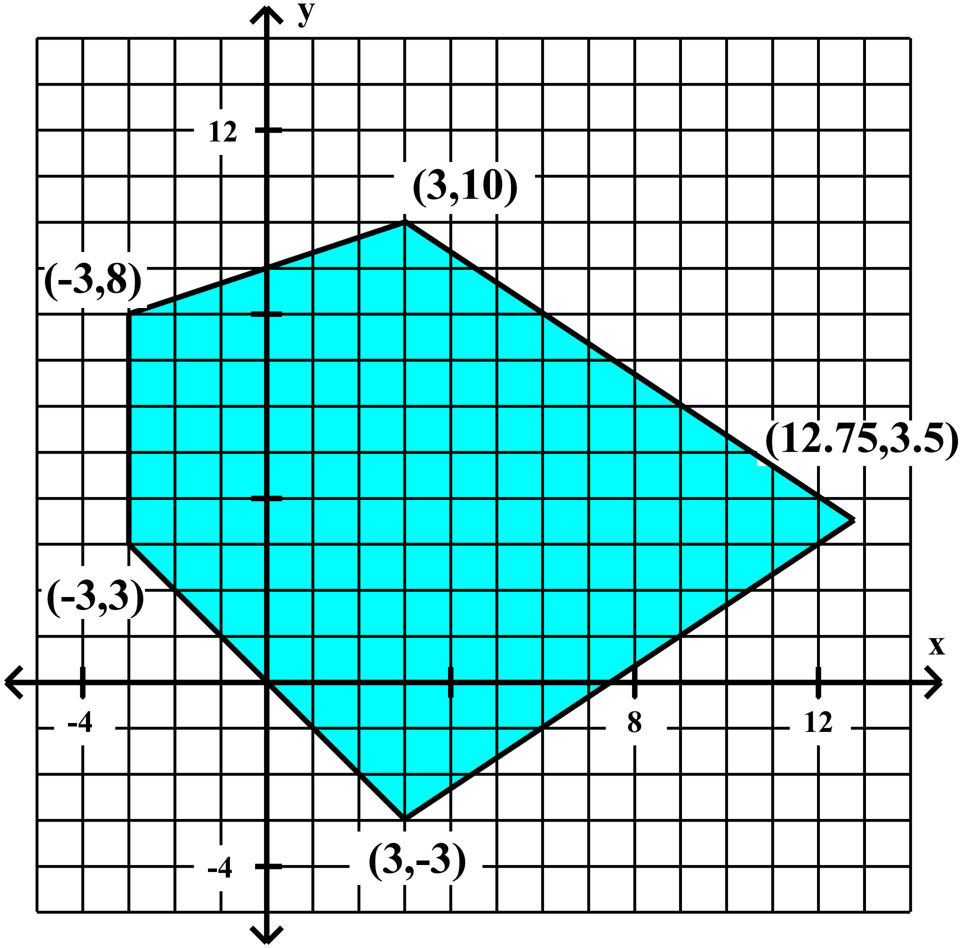

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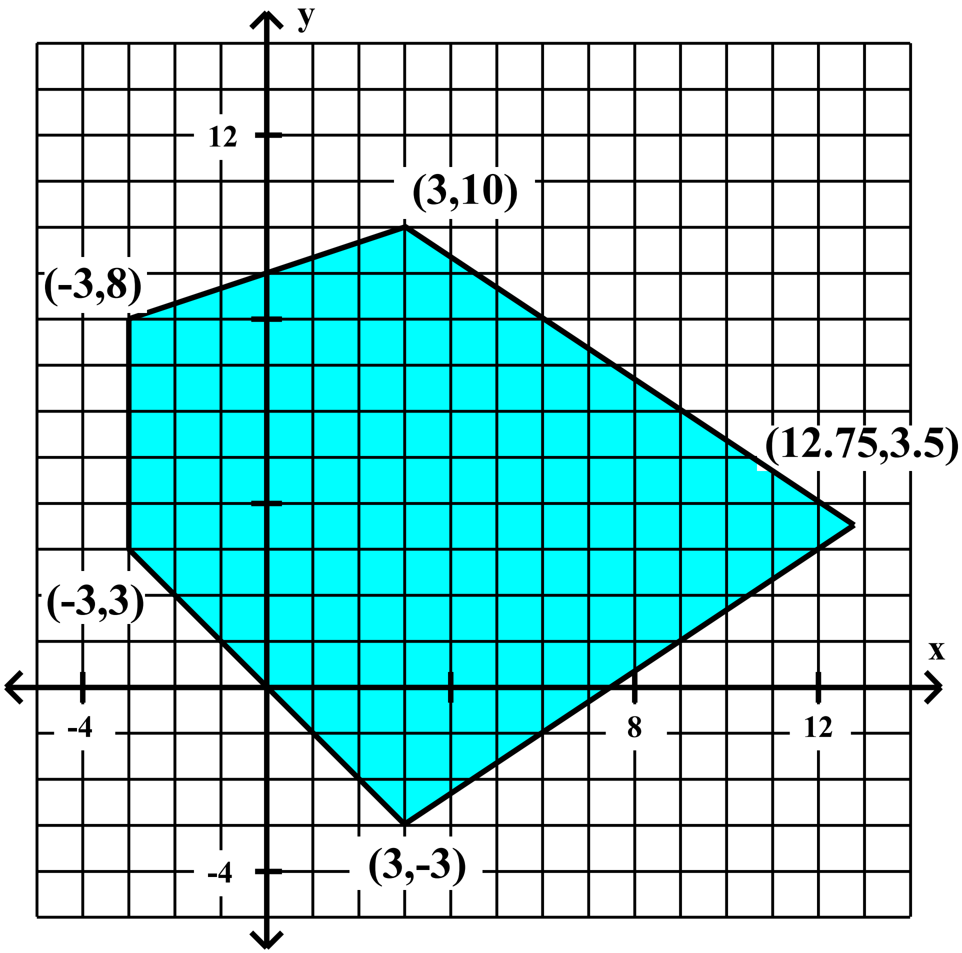
At (-3,8) $\Rightarrow$ F = -12 – 16 = **-28**

Algebra II Class Worksheet #4 Unit 4



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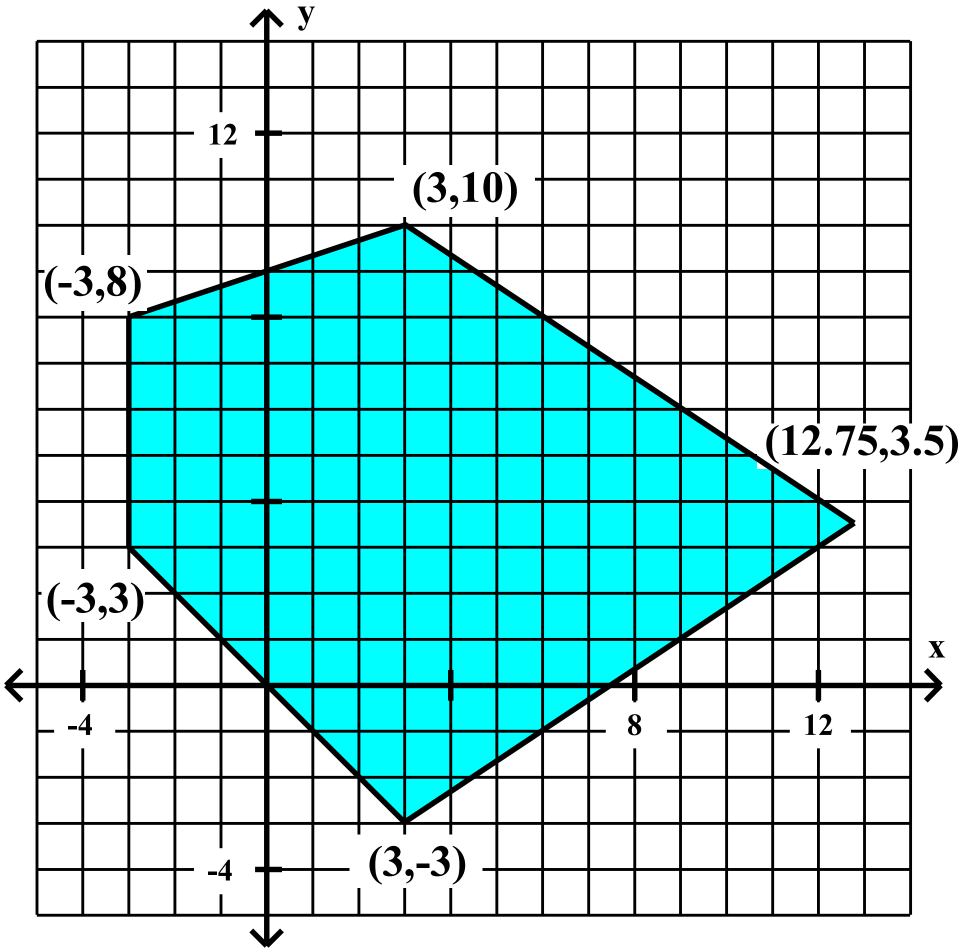
At (-3,8) $\Rightarrow$ F = -12 – 16 = **-28**

At (-3,3)

Algebra II Class Worksheet #4 Unit 4



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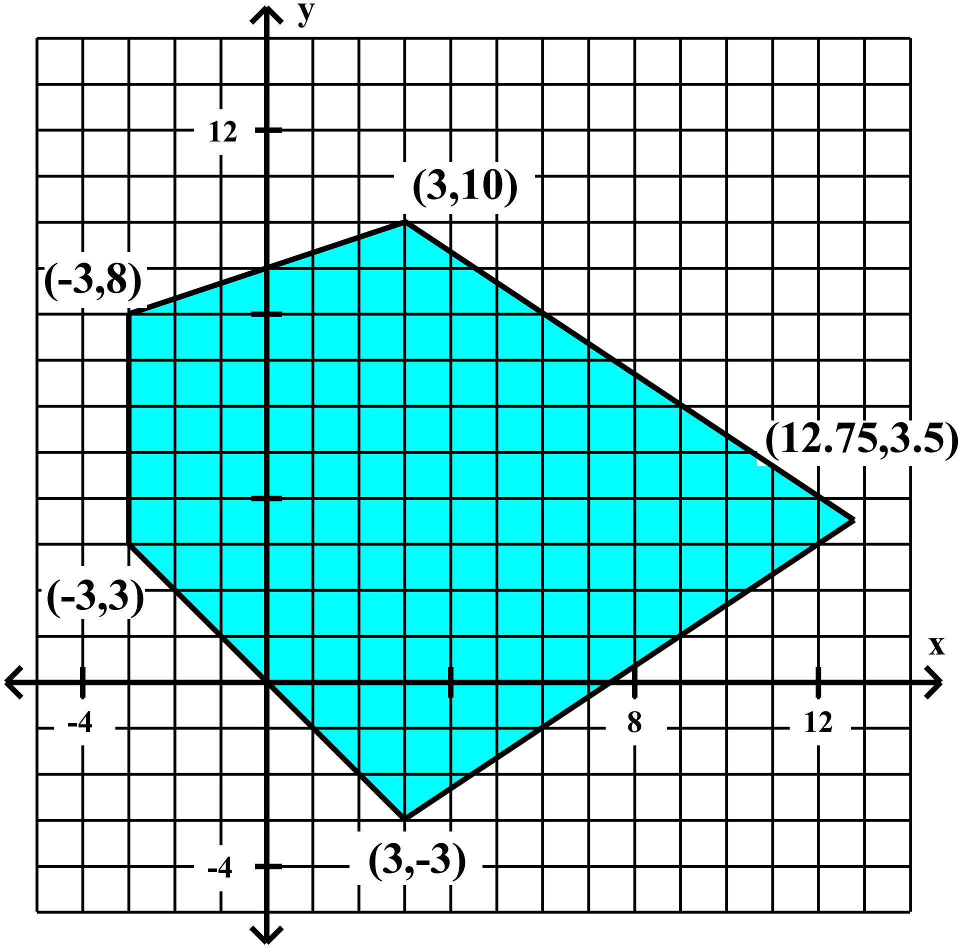
At (-3,3) $\Rightarrow$ F =

Algebra II   Class Worksheet #4   Unit 4



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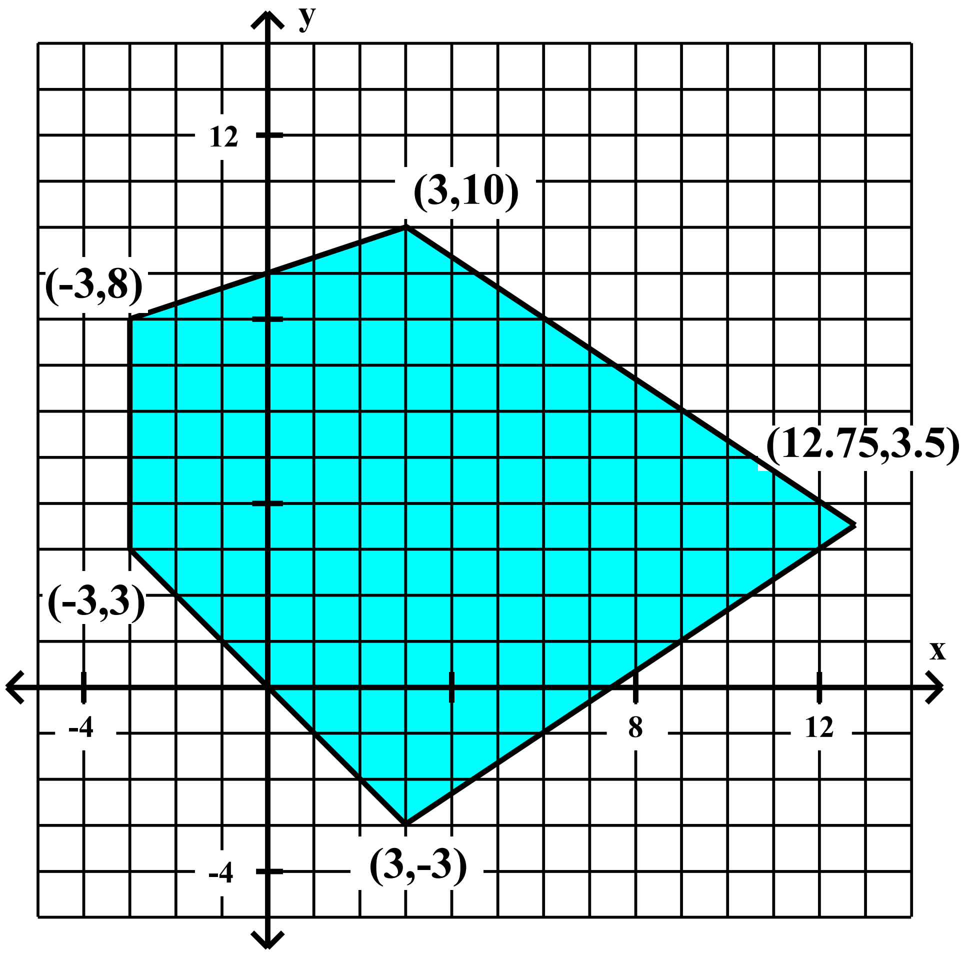
At (-3,3) $\Rightarrow$ F = -12

Algebra II   Class Worksheet #4   Unit 4



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At (-3,3) ⟹ $F = -12 -$

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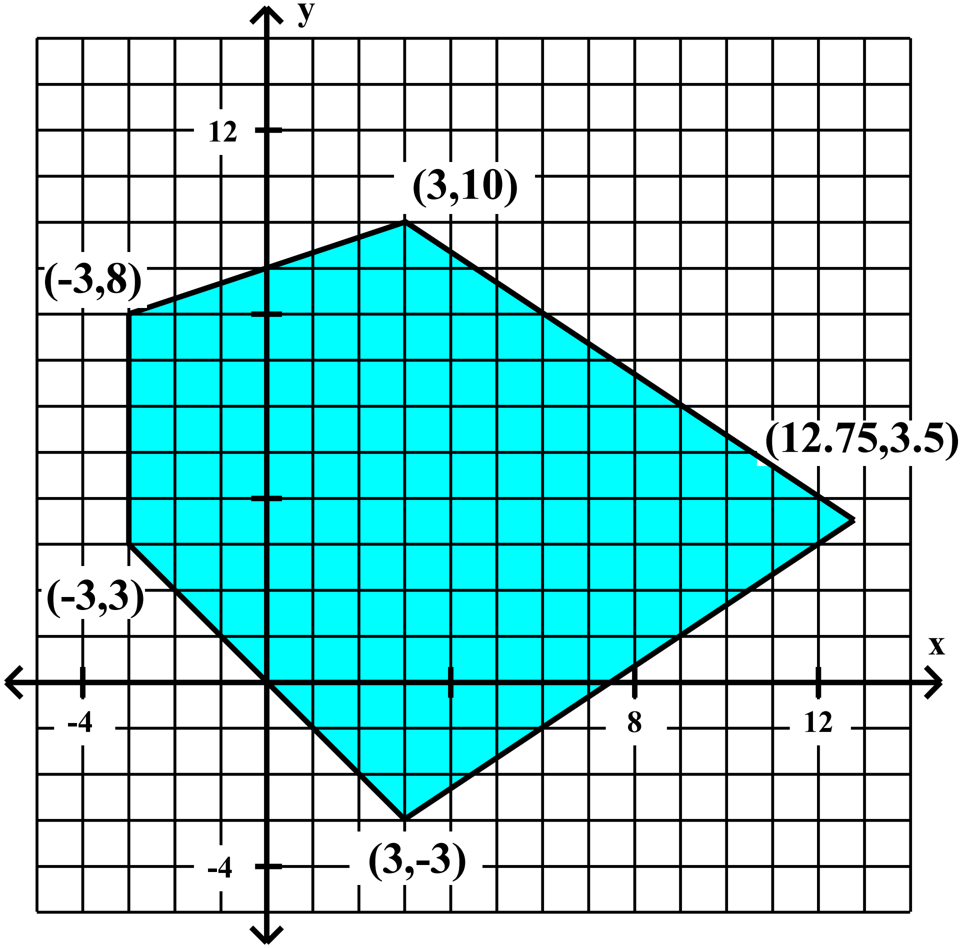

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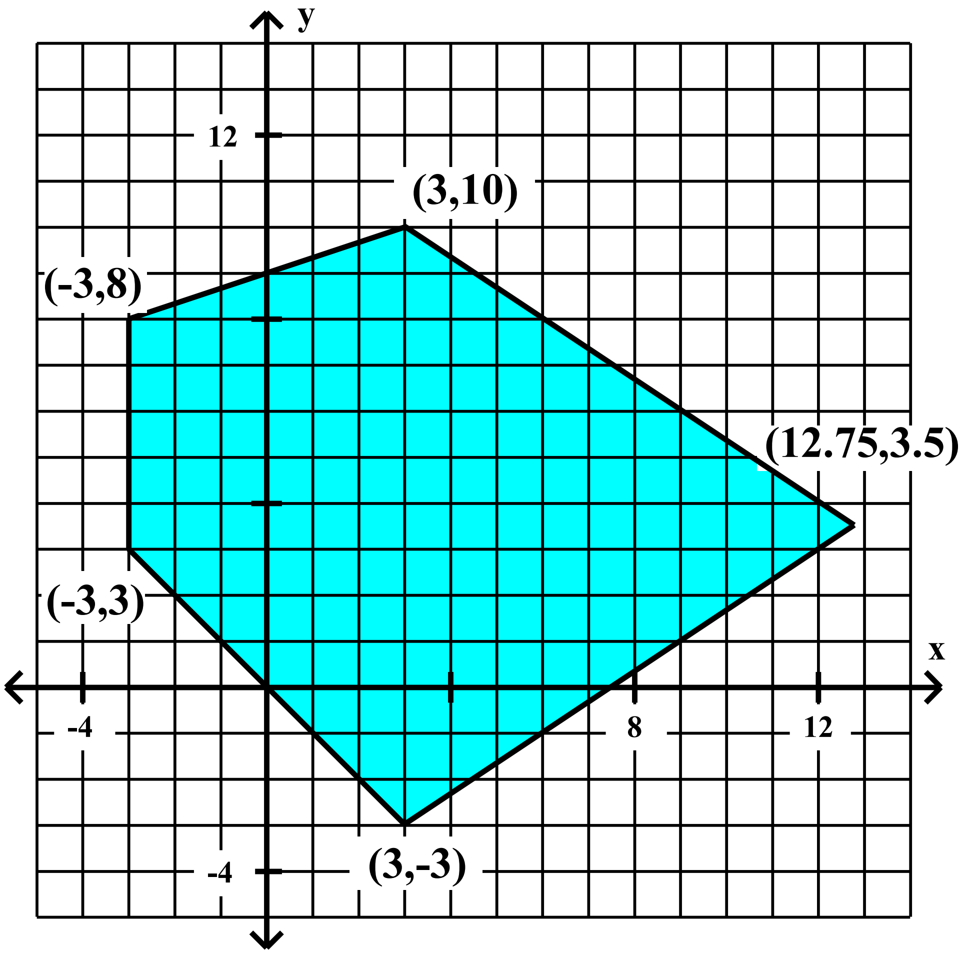
At (-3,3) ⇨ F = -12 – 6

Algebra II Class Worksheet #4 Unit 4



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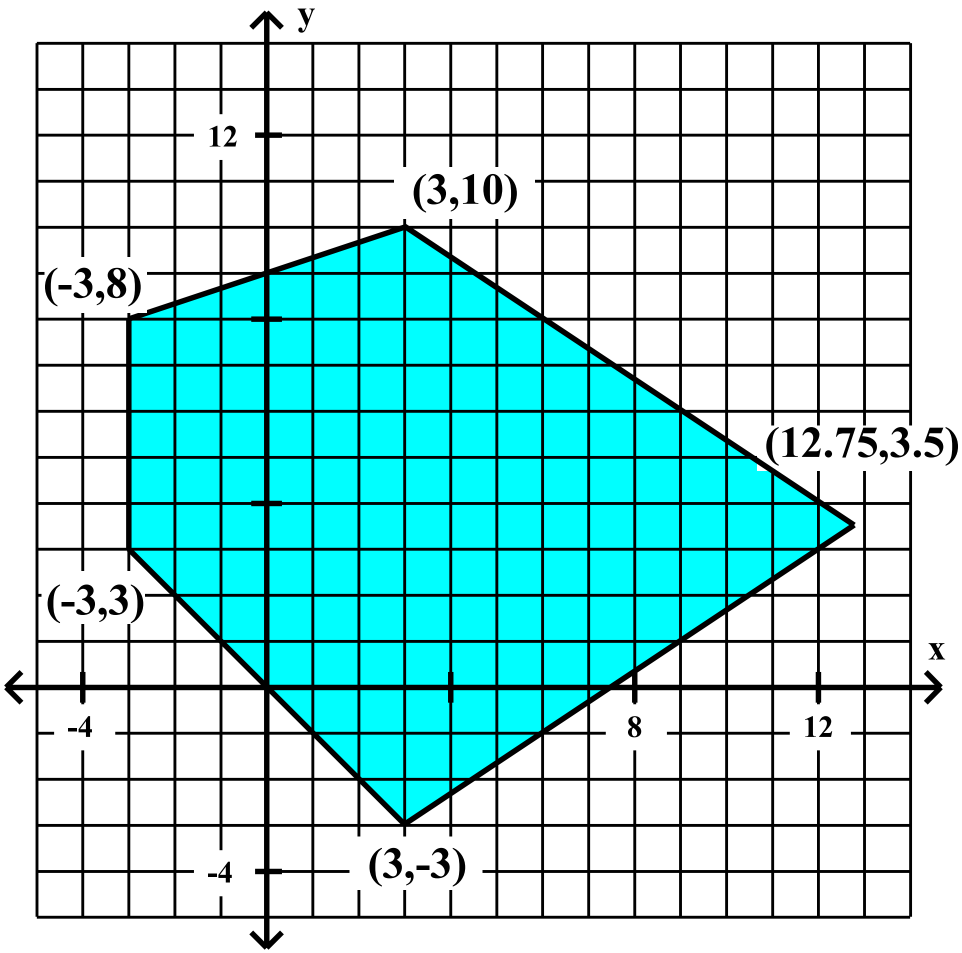

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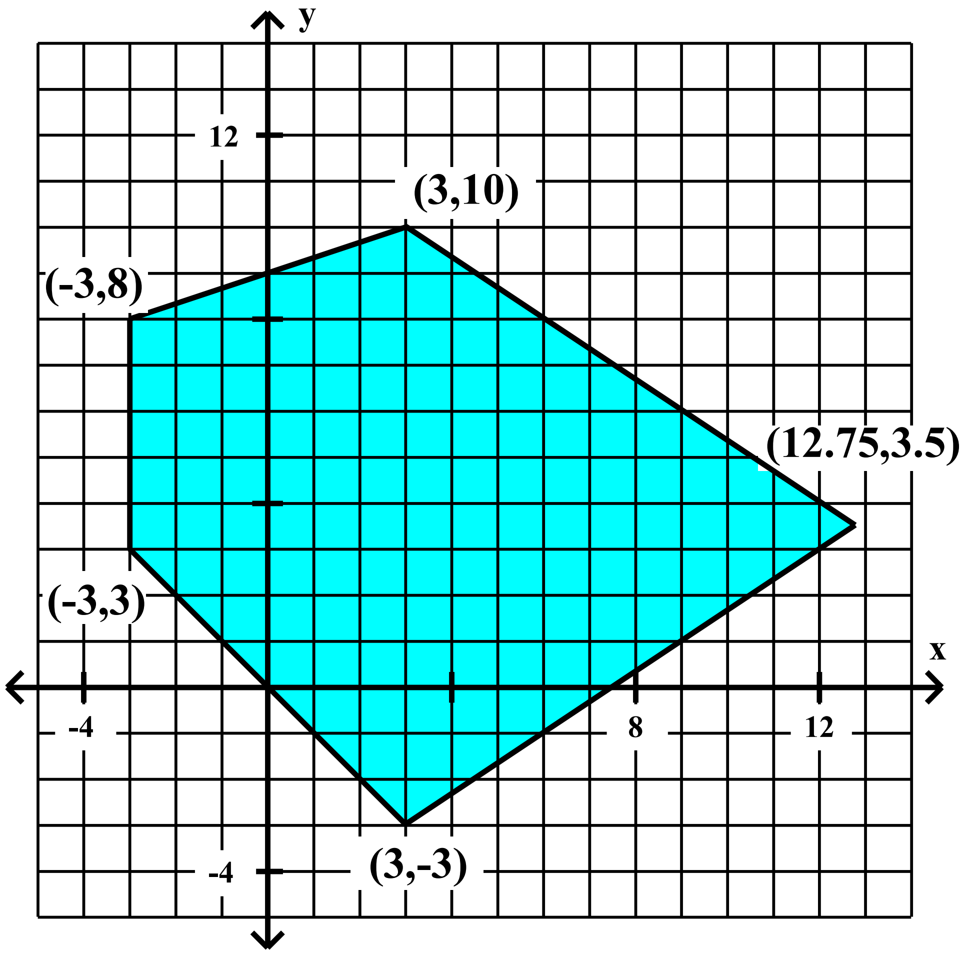
At (-3,3) $\Rightarrow$ F = -12 – 6 = **-18**

Algebra II Class Worksheet #4 Unit 4



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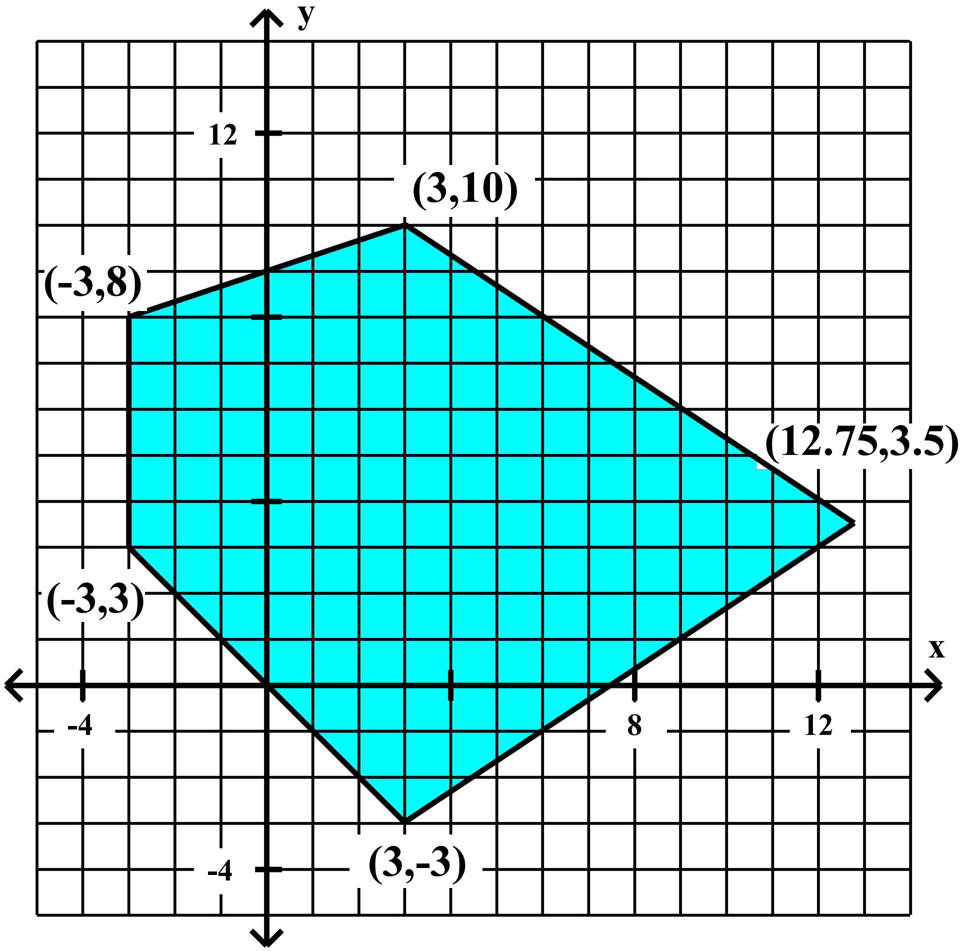
Algebra II Class Worksheet #4 Unit 4



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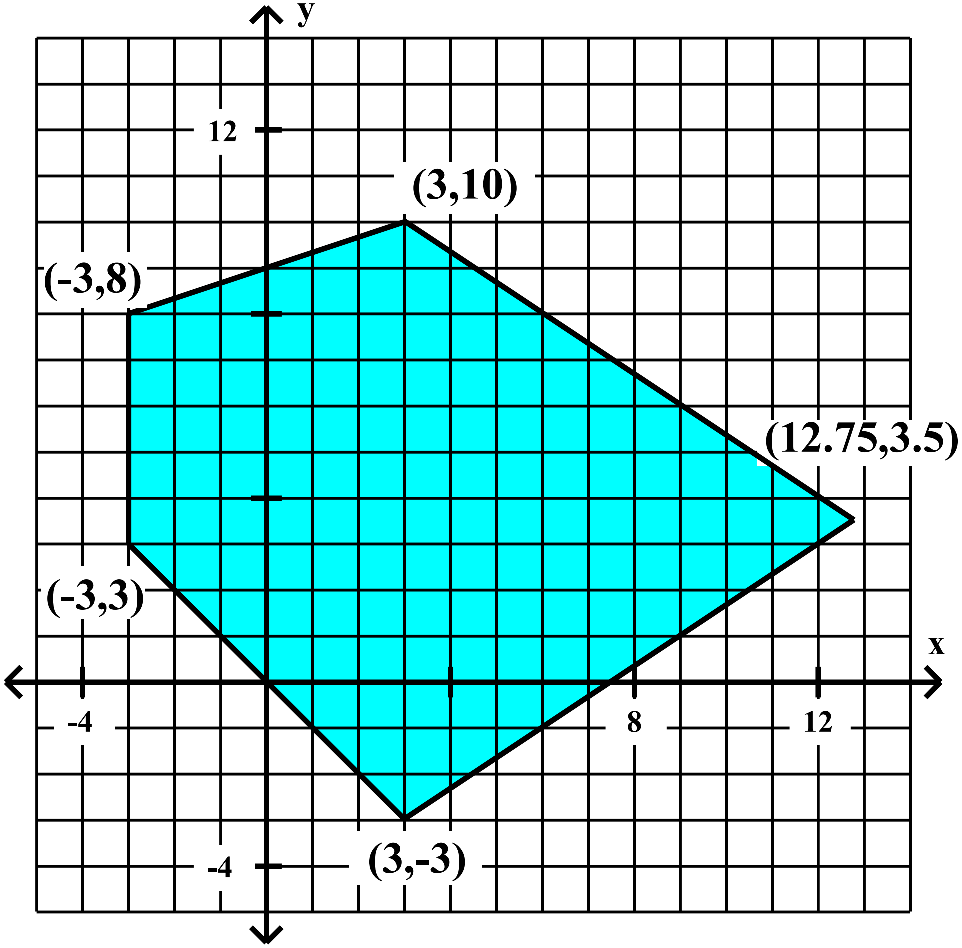
Algebra II   Class Worksheet #4   Unit 4



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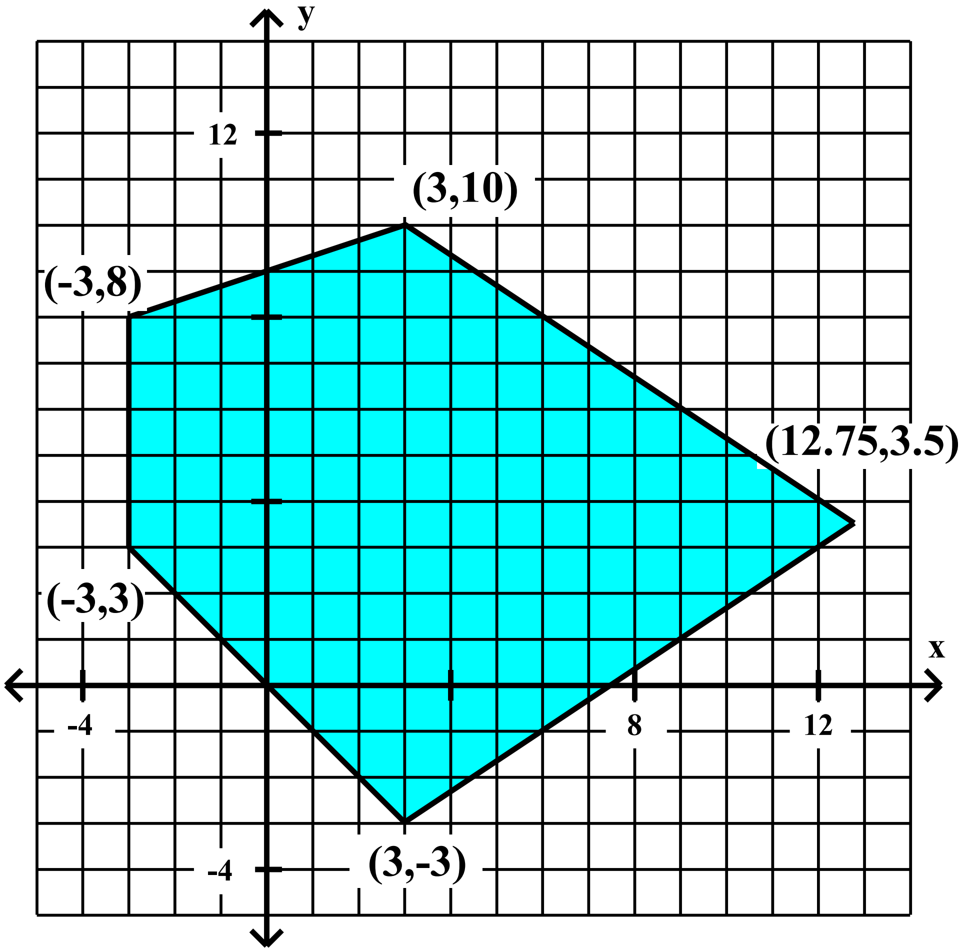
Algebra II Class Worksheet #4 Unit 4



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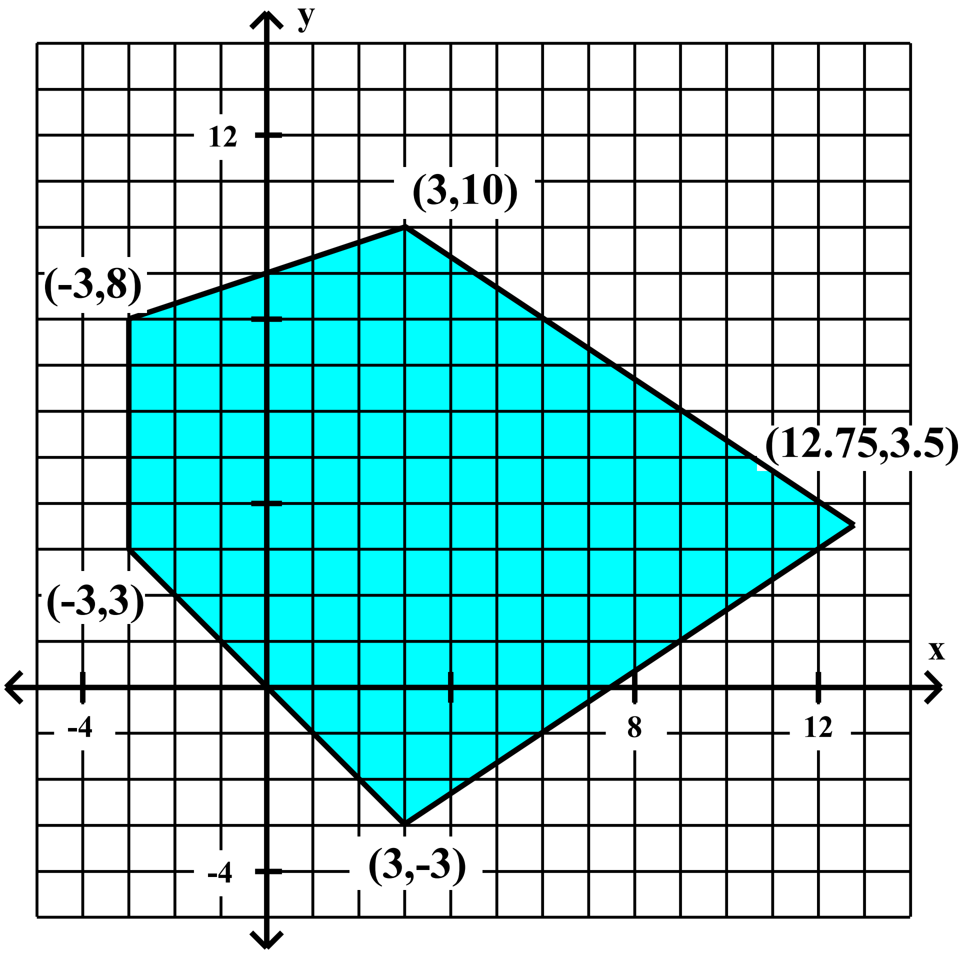
Algebra II Class Worksheet #4 Unit 4



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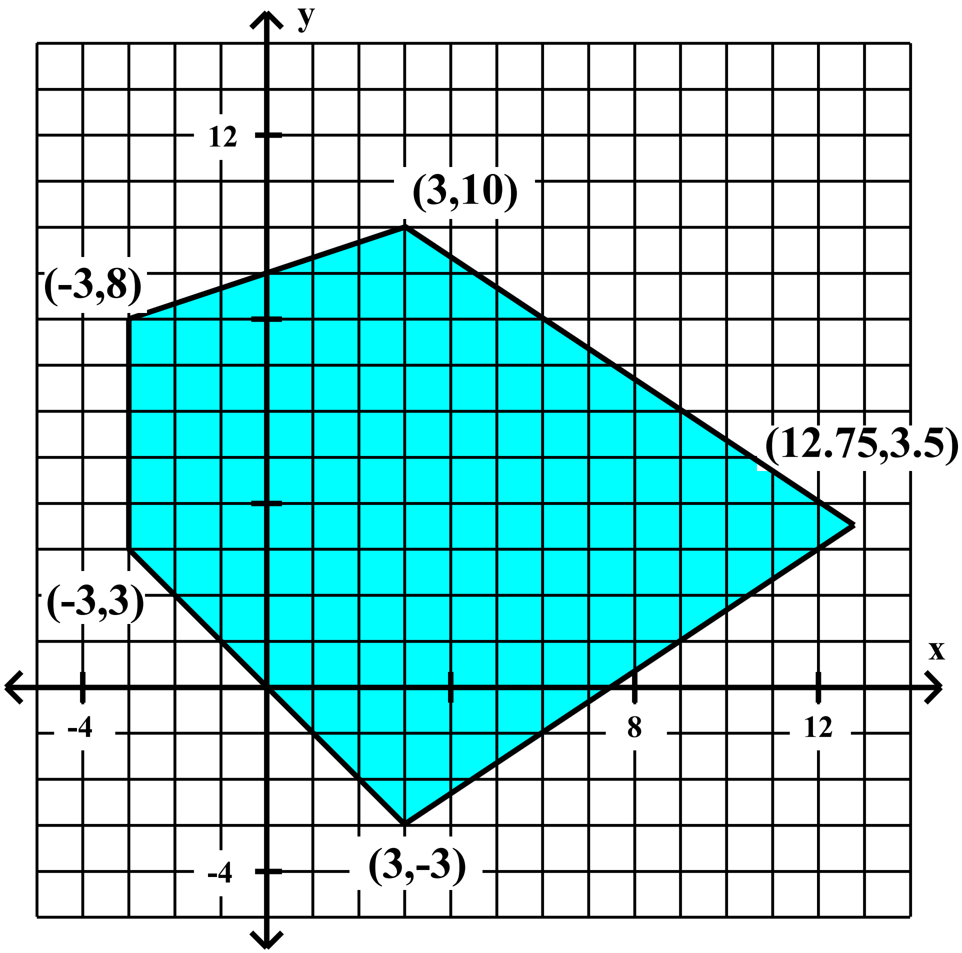
Algebra II Class Worksheet #4 Unit 4



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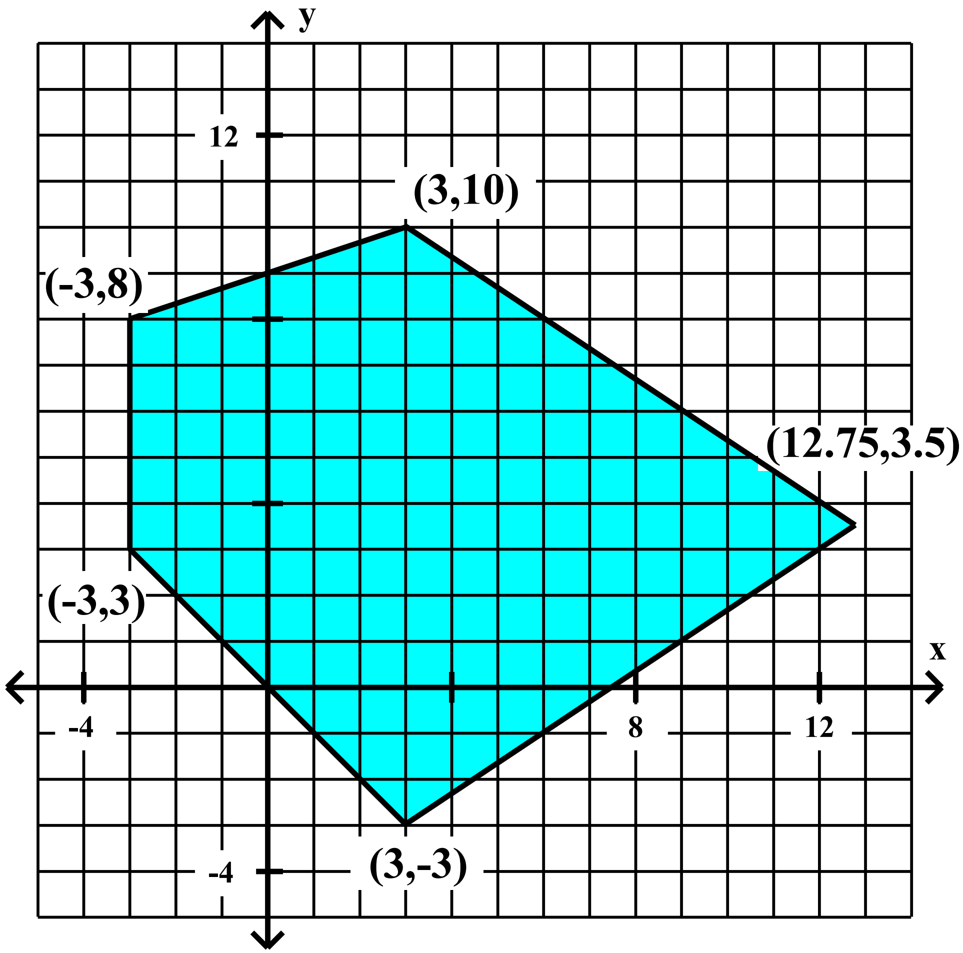

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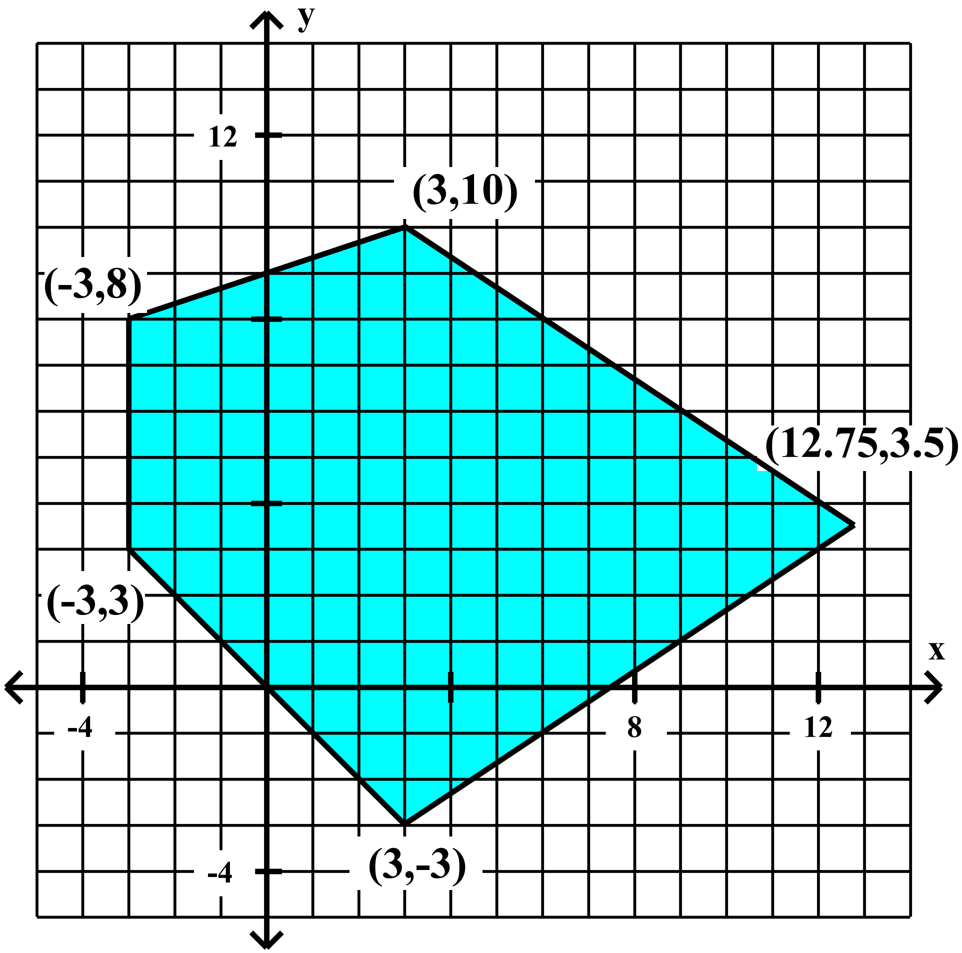
Algebra II Class Worksheet #4 Unit 4



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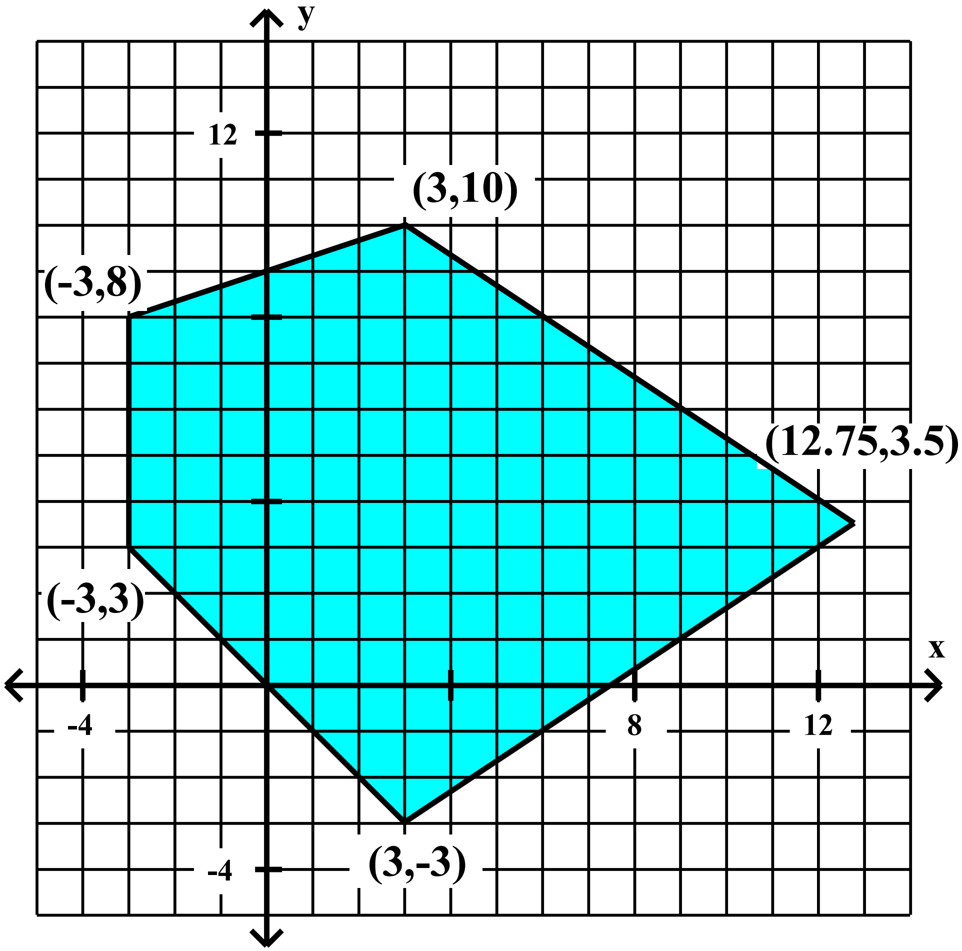
At (12.75,3.5)

Algebra II Class Worksheet #4 Unit 4



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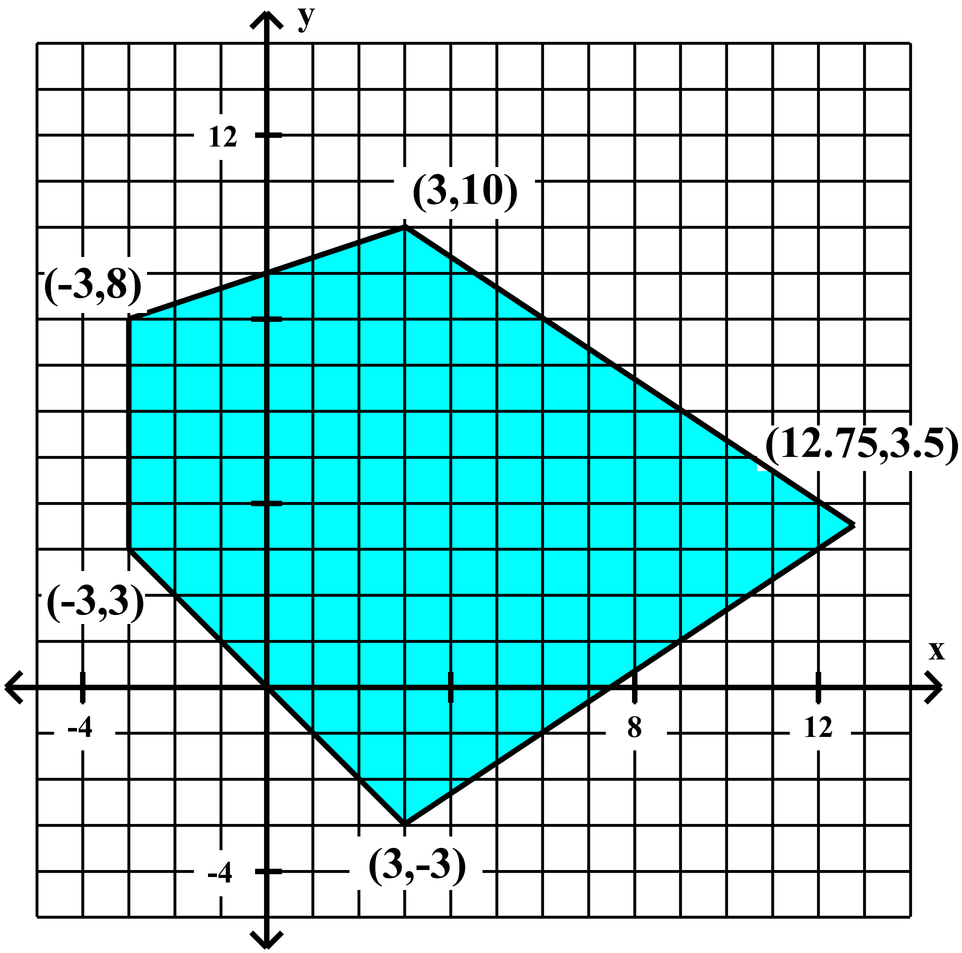

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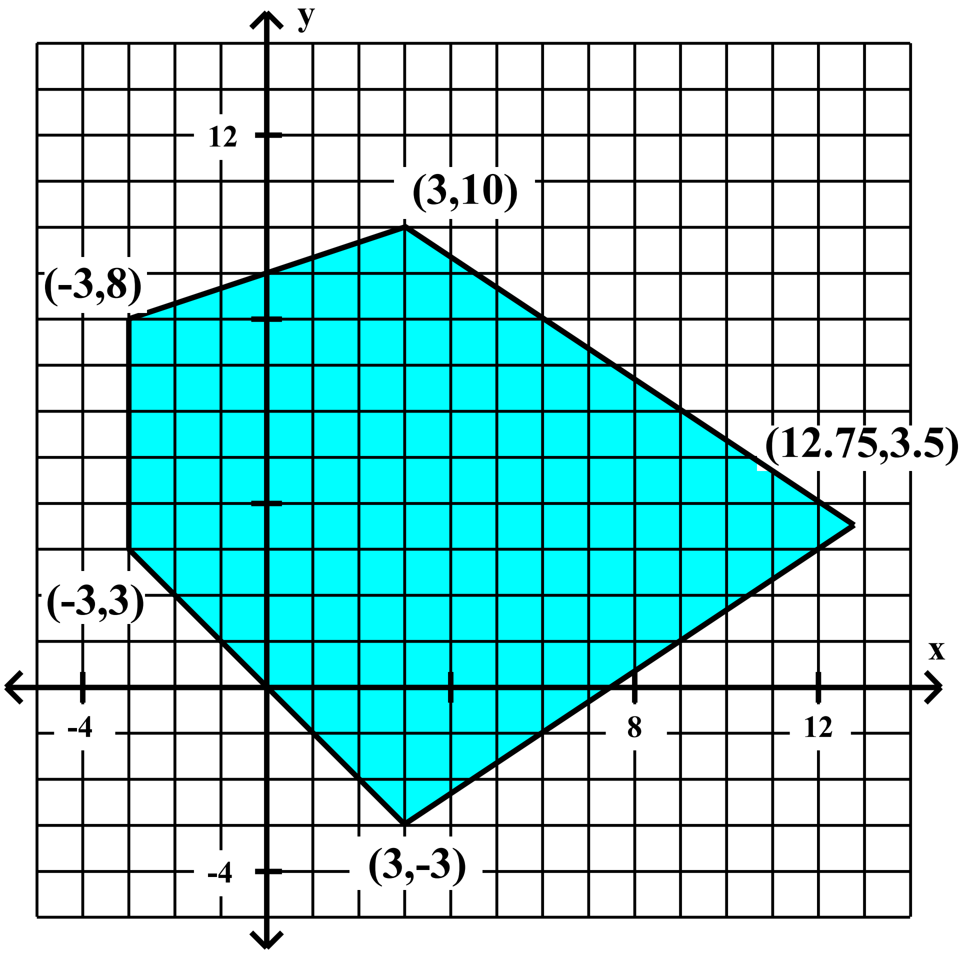
Algebra II Class Worksheet #4 Unit 4



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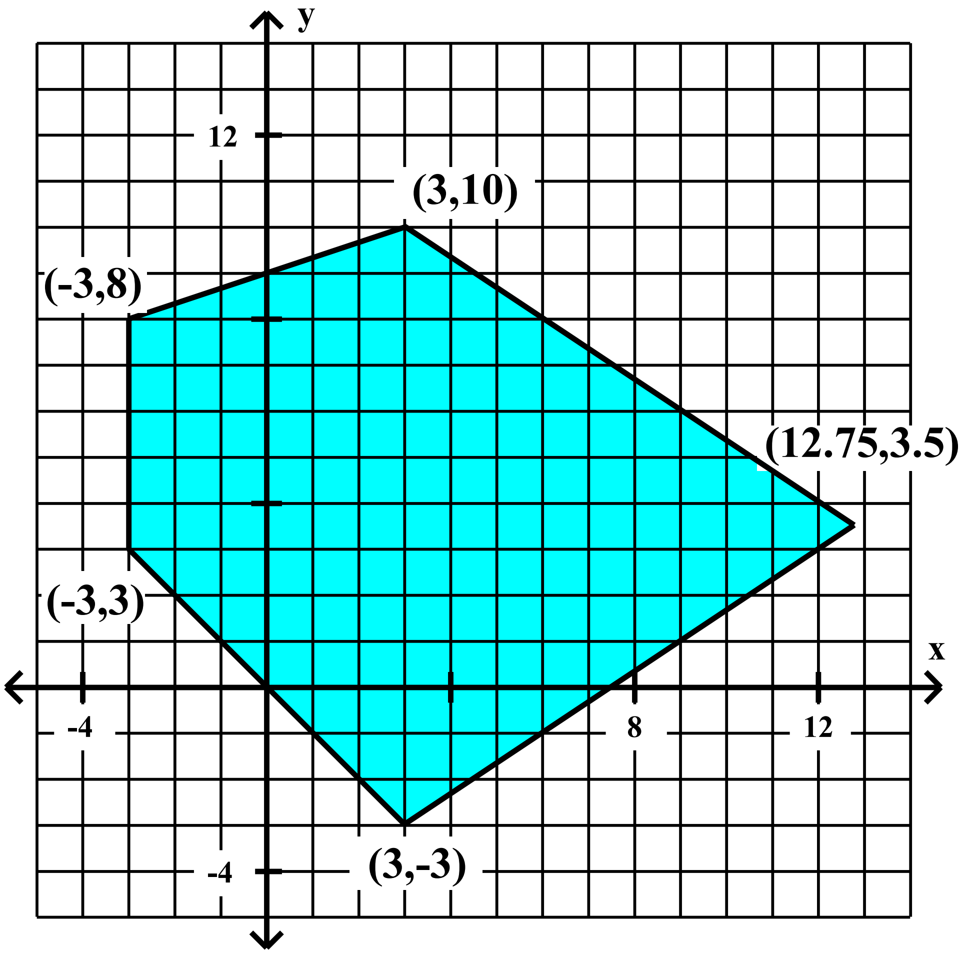
Algebra II   Class Worksheet #4   Unit 4



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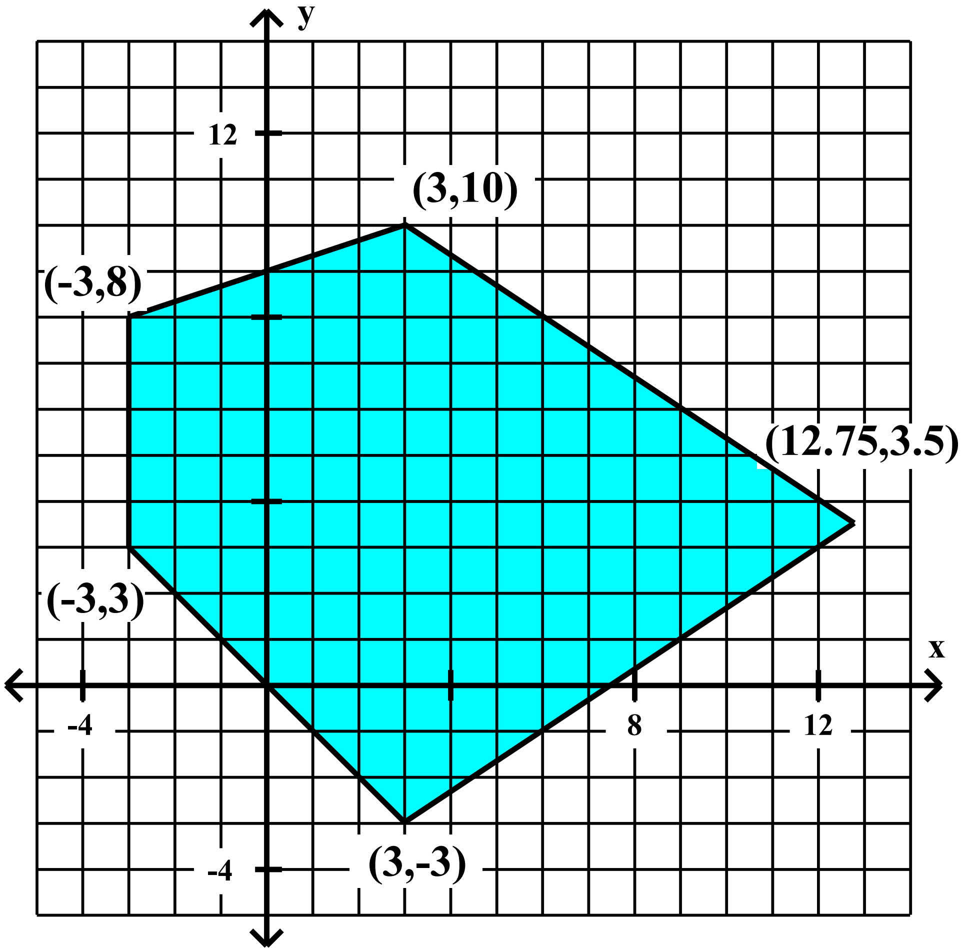
Algebra II   Class Worksheet #4   Unit 4



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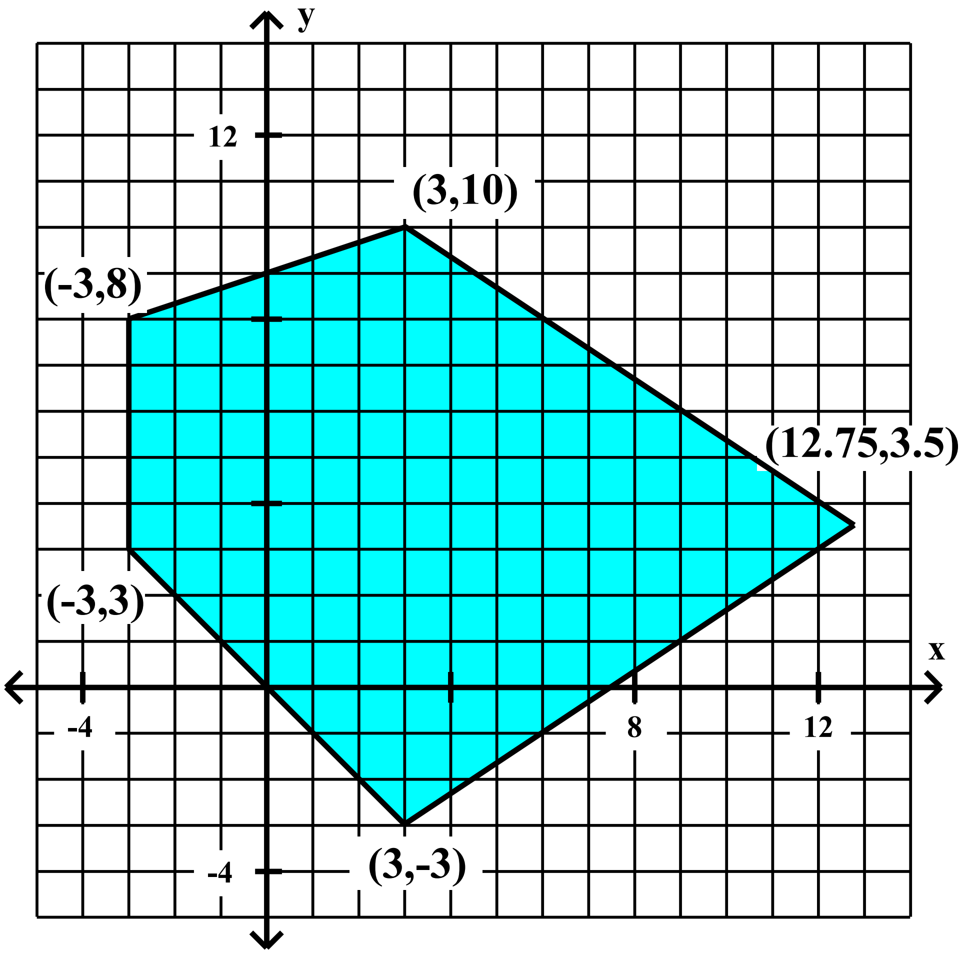
Algebra II Class Worksheet #4 Unit 4



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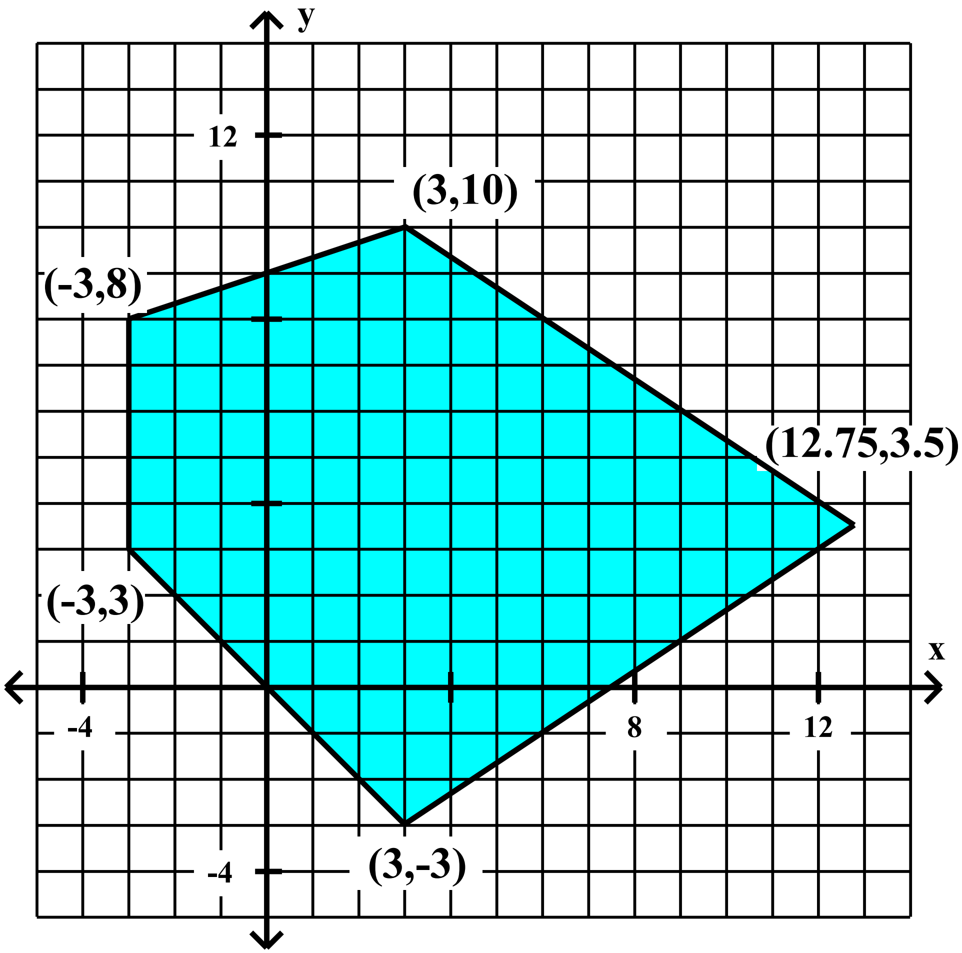
Algebra II Class Worksheet #4 Unit 4



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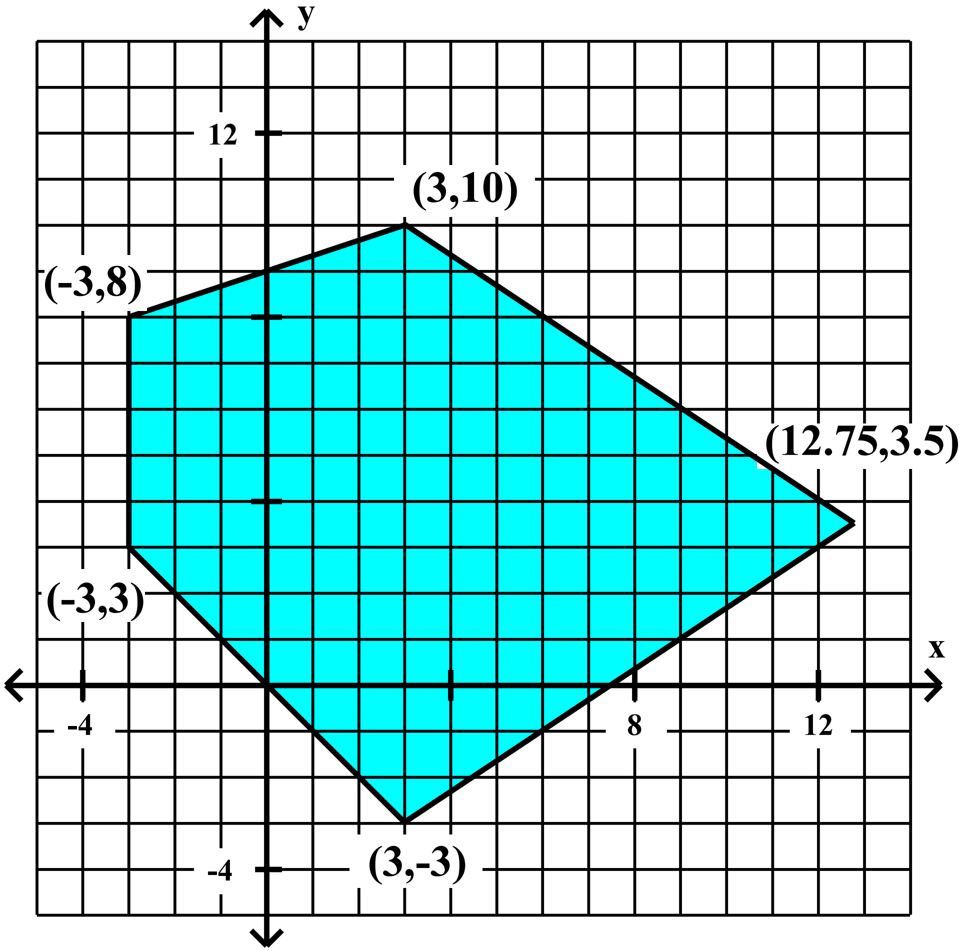
Algebra II   Class Worksheet #4   Unit 4



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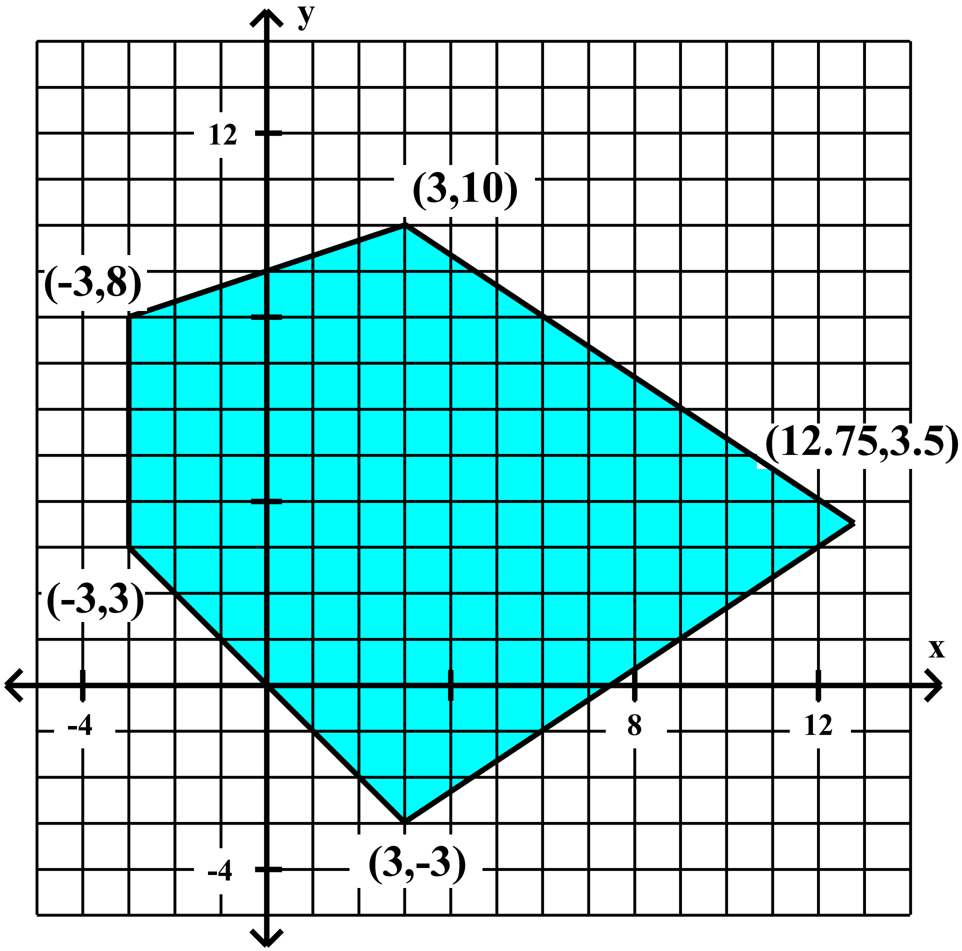

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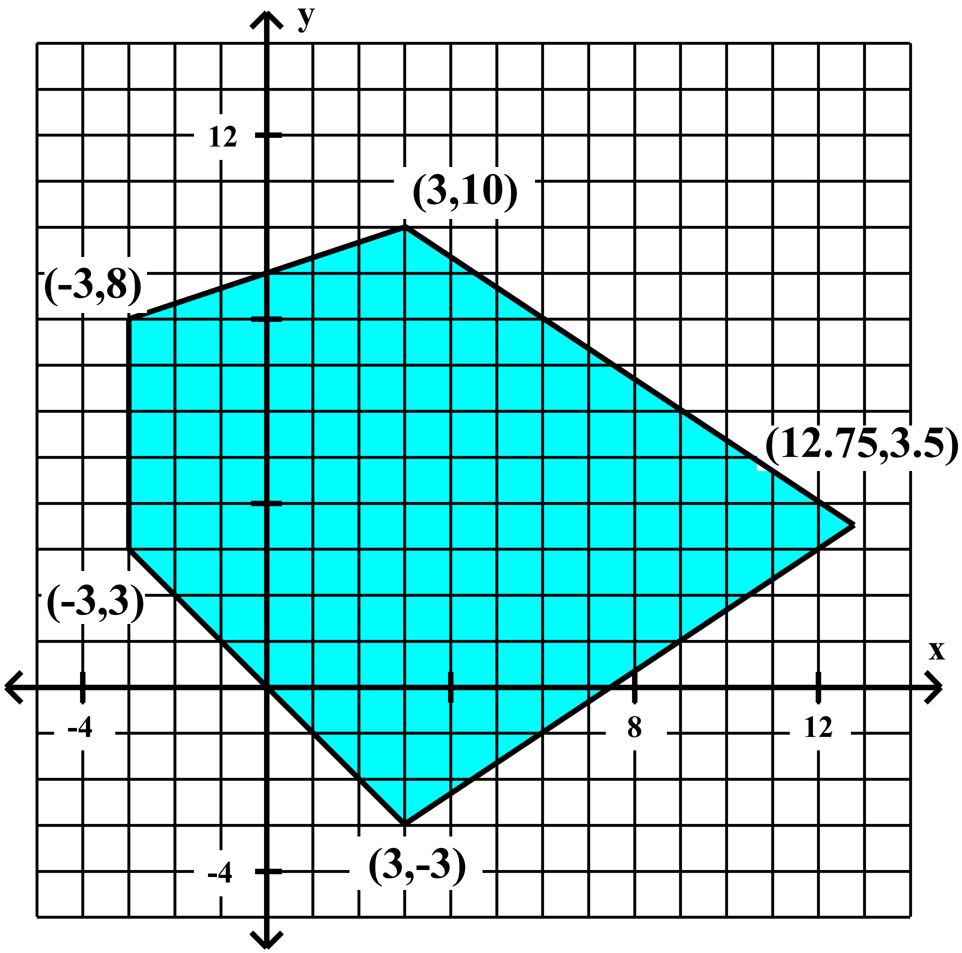

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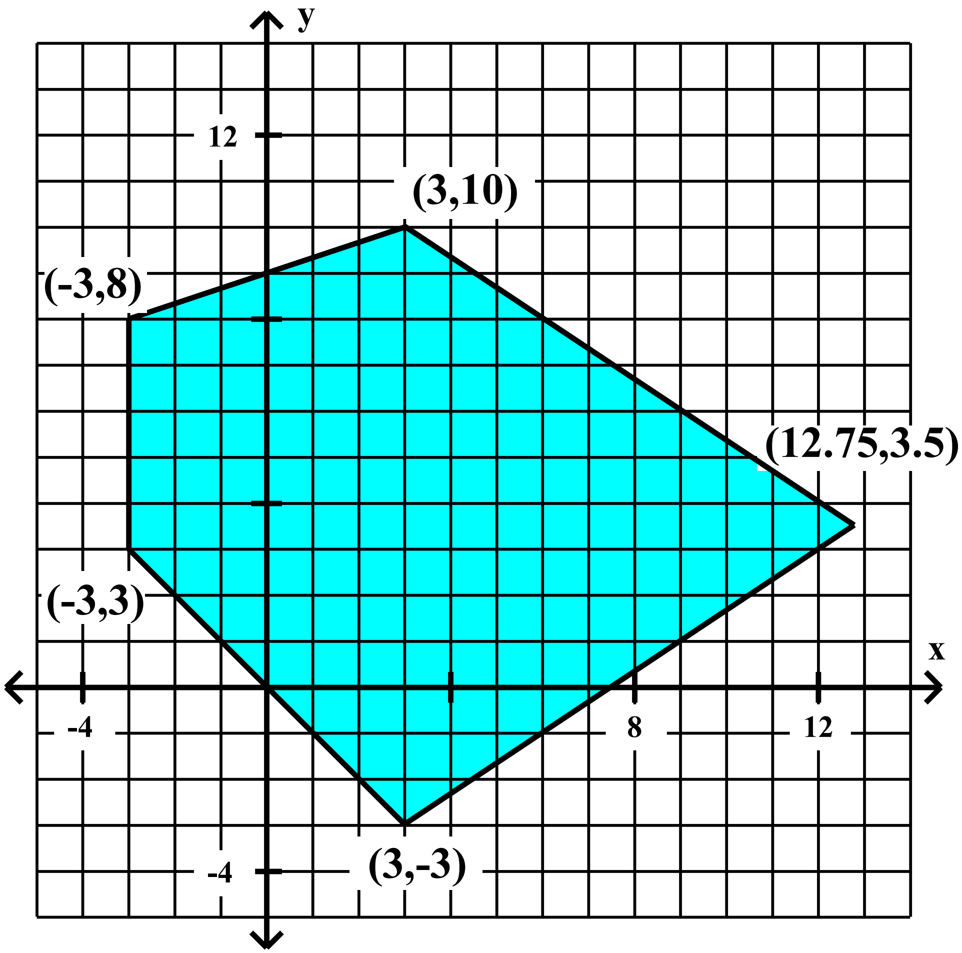

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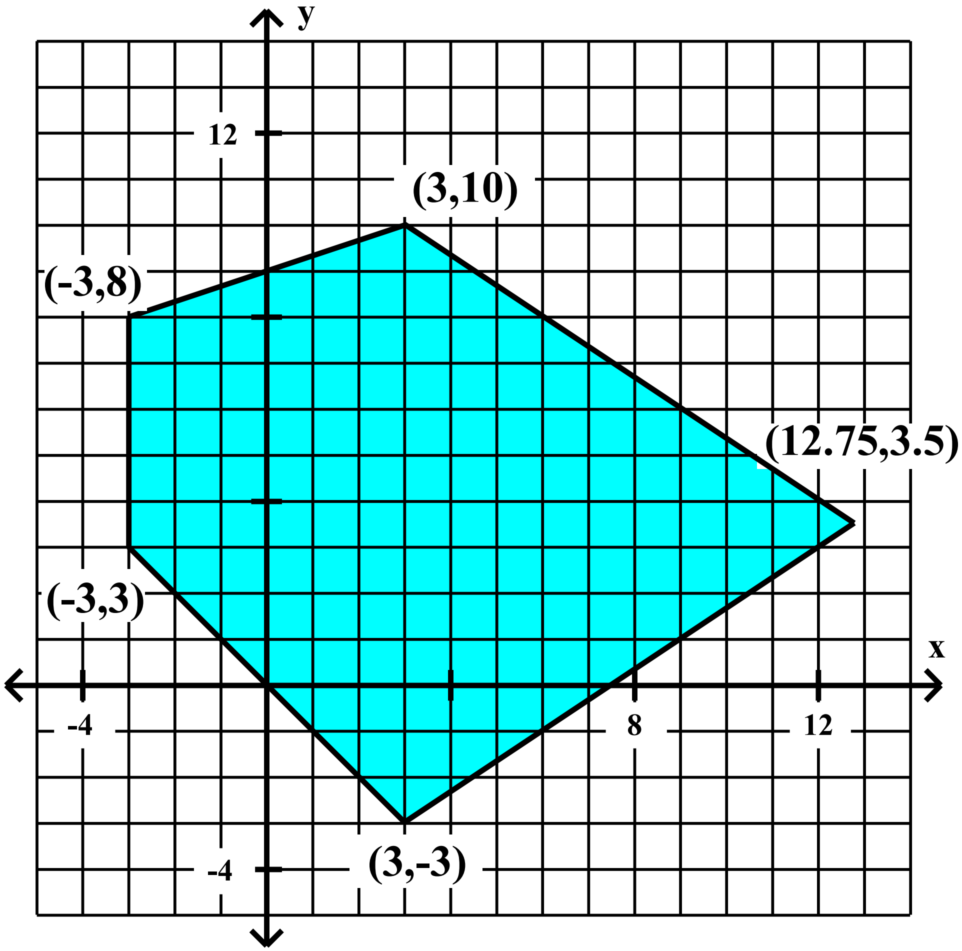

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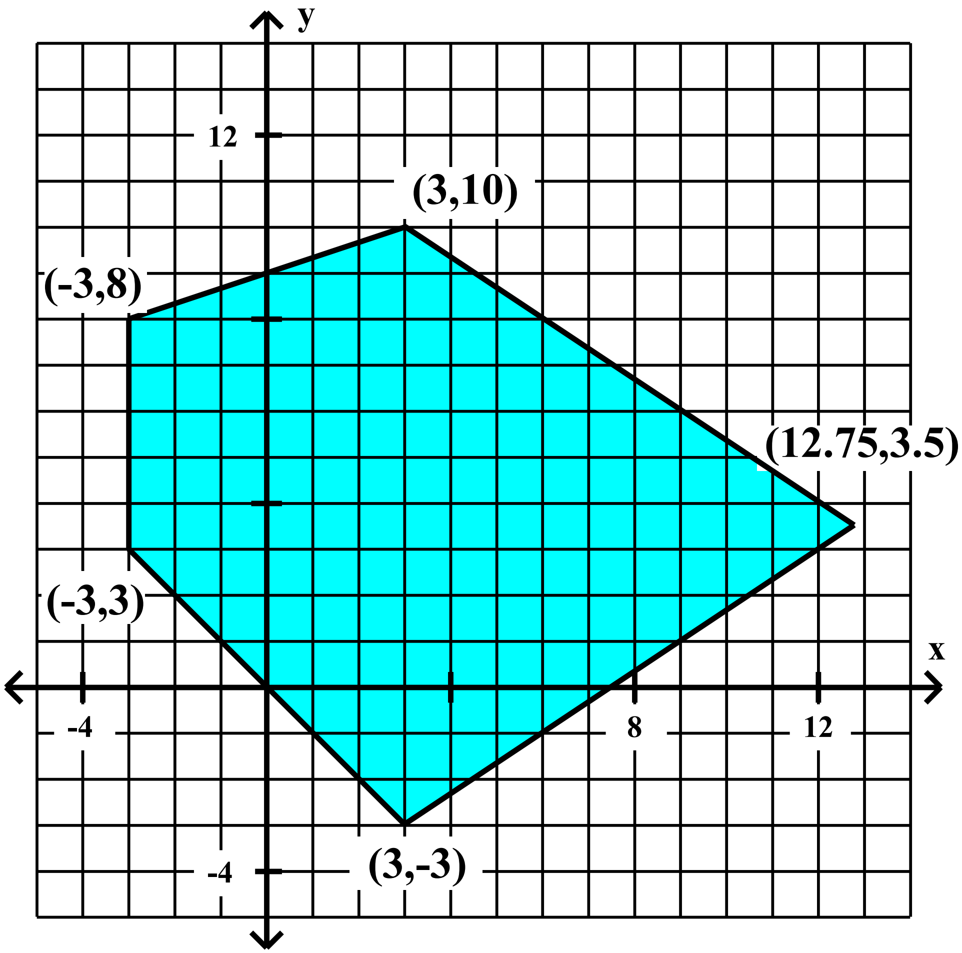

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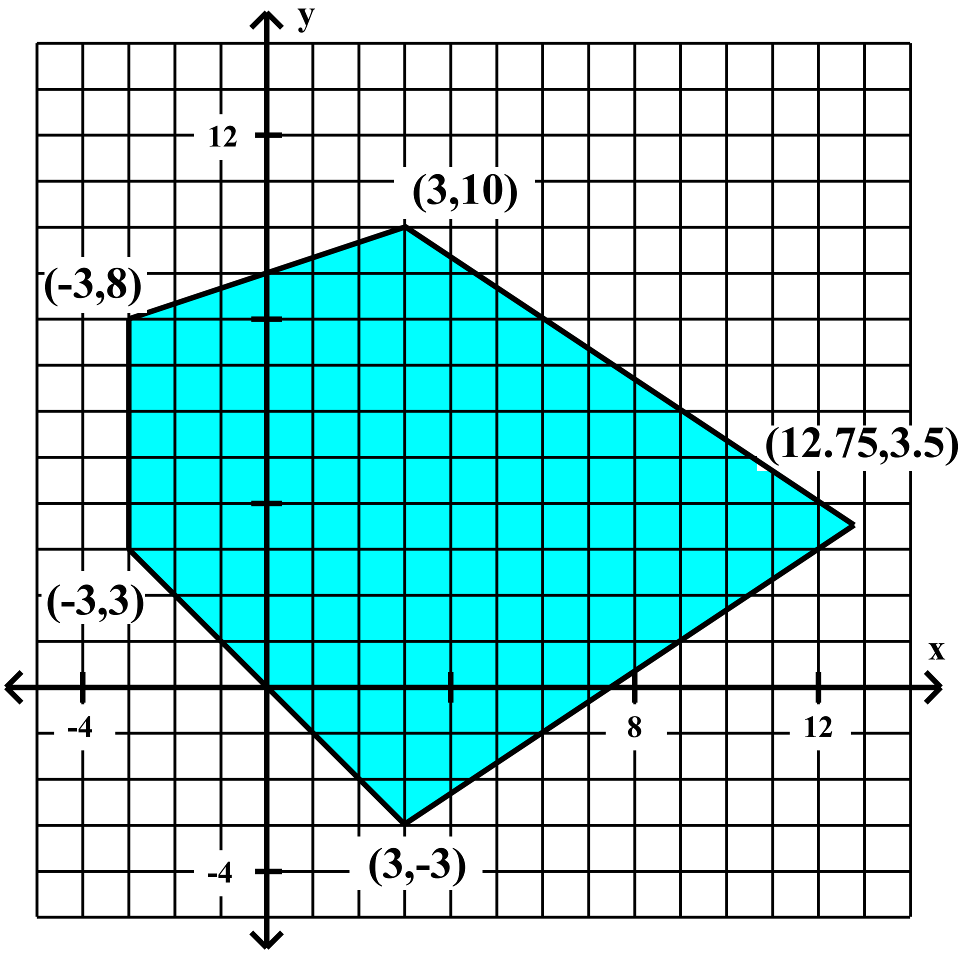

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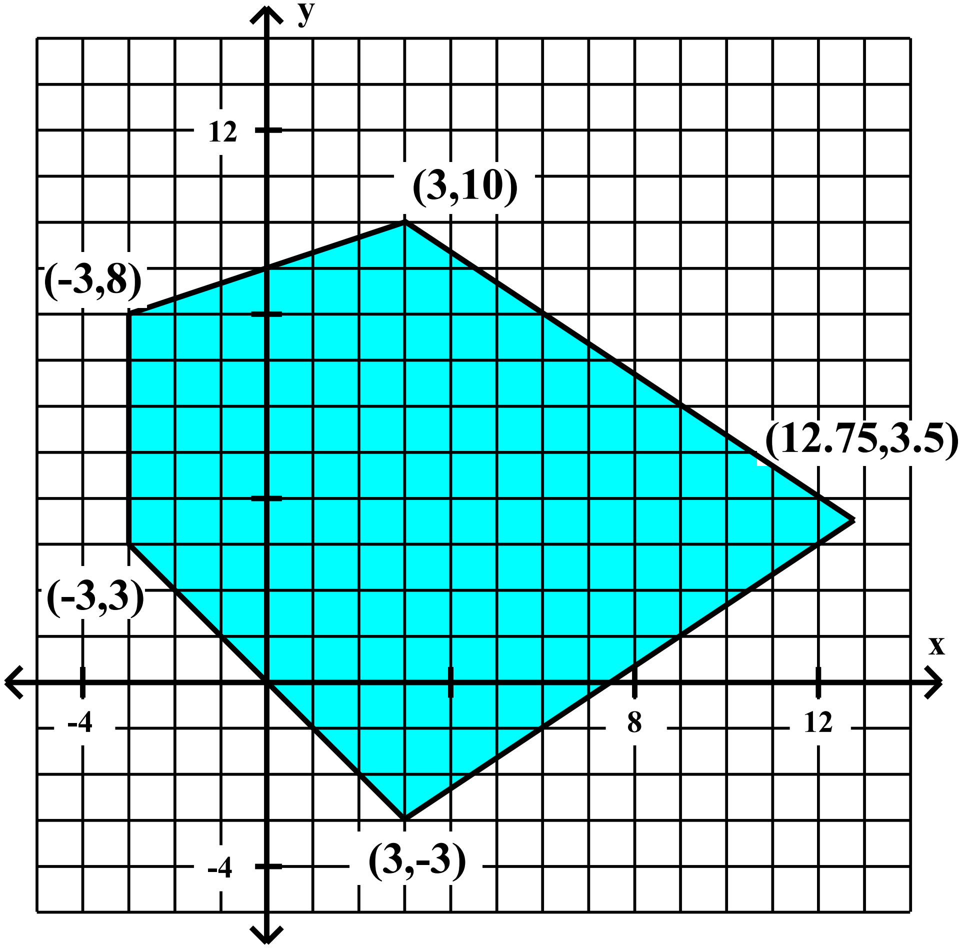

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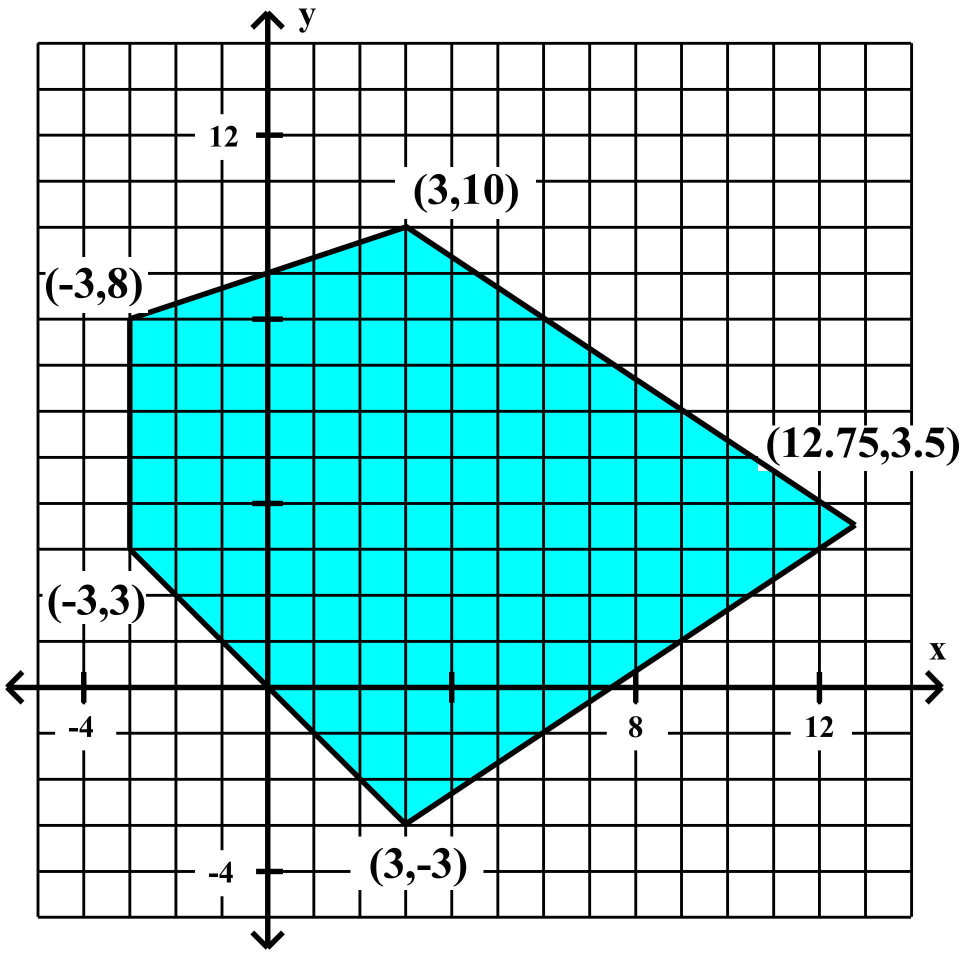

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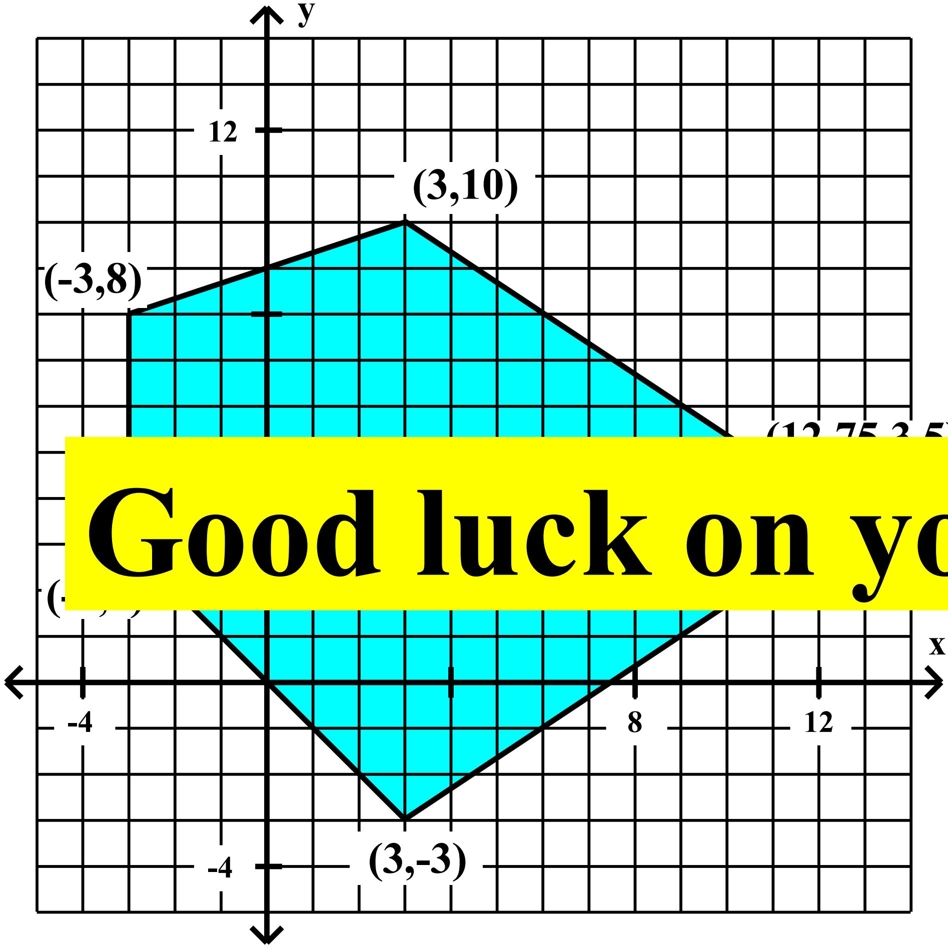

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Good luck on your homework !!

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