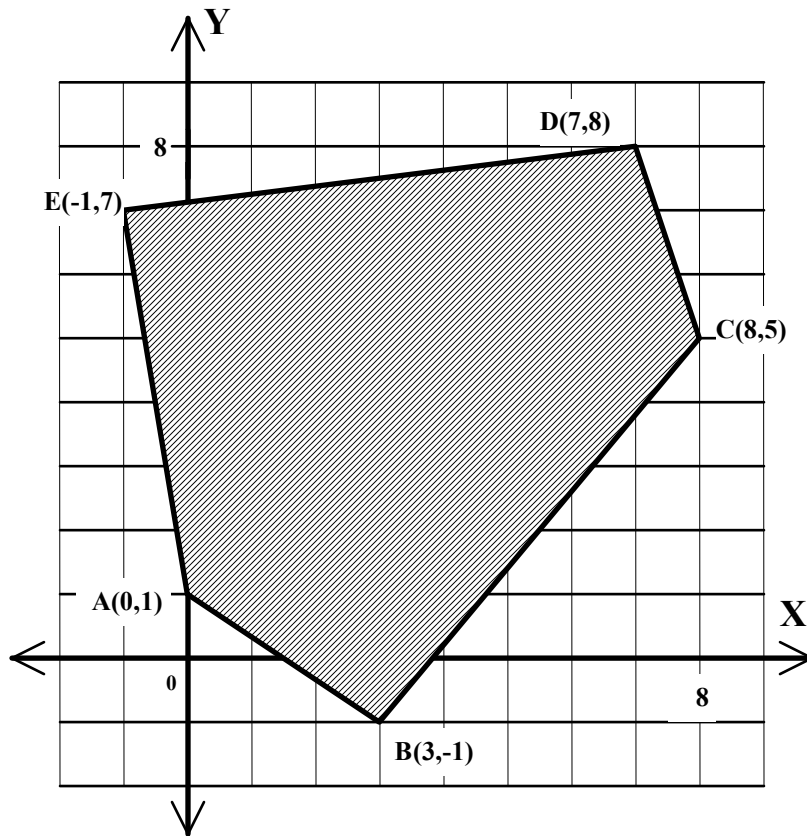


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Below, you are given a graph of a system of inequalities (system of constraints) and several objective functions. In each case, you are to find both the maximum and the minimum value of the objective function and the vertex at which each occurs.



1. $T = x + 4y$

$T_{\max} = \underline{\hspace{2cm}}$ at $\underline{\hspace{2cm}}$

$T_{\min} = \underline{\hspace{2cm}}$ at $\underline{\hspace{2cm}}$

2. $T = 5x - 3y$

$T_{\max} = \underline{\hspace{2cm}}$ at $\underline{\hspace{2cm}}$

$T_{\min} = \underline{\hspace{2cm}}$ at $\underline{\hspace{2cm}}$

3. $T = 2x - 3y$

$T_{\max} = \underline{\hspace{2cm}}$ at $\underline{\hspace{2cm}}$

$T_{\min} = \underline{\hspace{2cm}}$ at $\underline{\hspace{2cm}}$

4. $T = 3x + y$

$T_{\max} = \underline{\hspace{2cm}}$ at $\underline{\hspace{2cm}}$

$T_{\min} = \underline{\hspace{2cm}}$ at $\underline{\hspace{2cm}}$

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

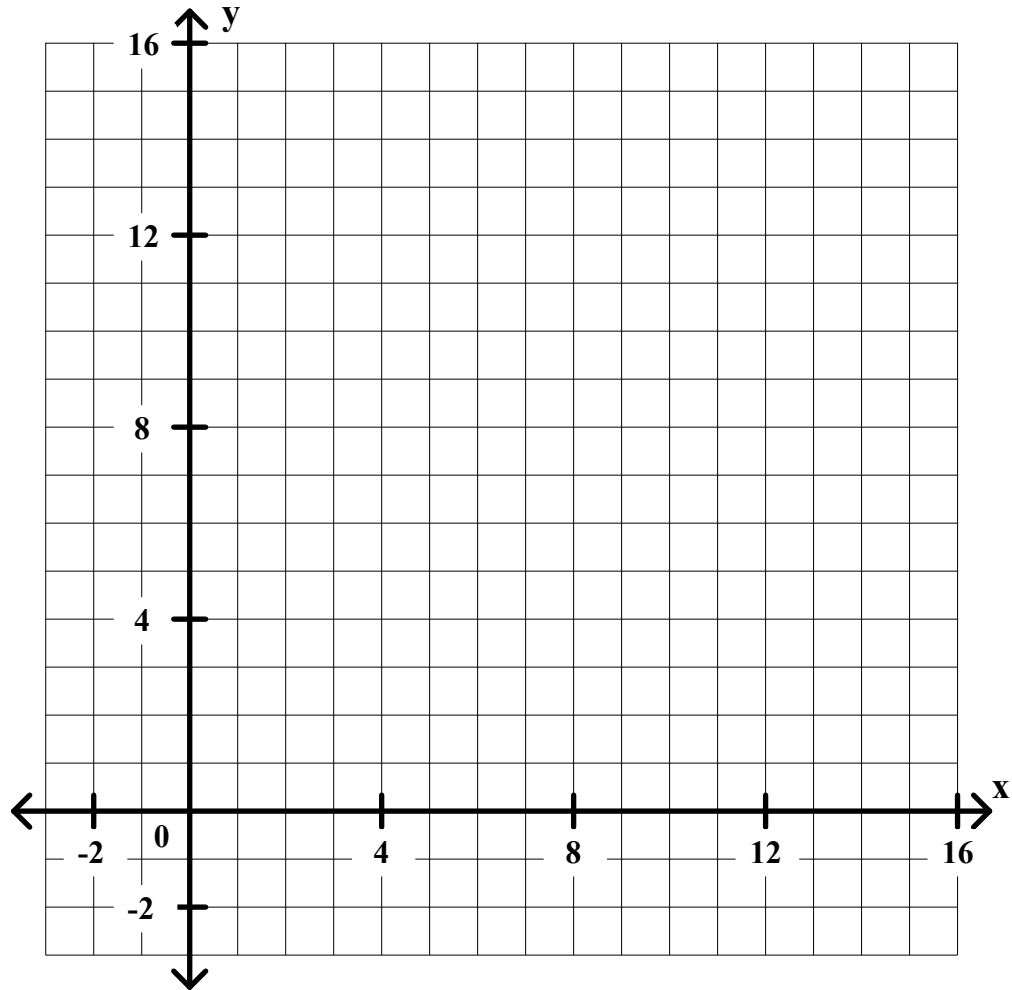
$$x + 3y \leq 42$$

$$-x + 2y \leq 18$$

$$x \geq 2$$

$$2x - 3y \leq 3$$

$$x + y \geq 9$$



5. $C = 2x + y$

$$C_{\max} = \underline{\hspace{2cm}} \text{ at } \underline{\hspace{2cm}}$$

$$C_{\min} = \underline{\hspace{2cm}} \text{ at } \underline{\hspace{2cm}}$$

6. $C = x - 3y$

$$C_{\max} = \underline{\hspace{2cm}} \text{ at } \underline{\hspace{2cm}}$$

$$C_{\min} = \underline{\hspace{2cm}} \text{ at } \underline{\hspace{2cm}}$$

7. $C = -2x + 5y$

$$C_{\max} = \underline{\hspace{2cm}} \text{ at } \underline{\hspace{2cm}}$$

$$C_{\min} = \underline{\hspace{2cm}} \text{ at } \underline{\hspace{2cm}}$$

8. $C = -3x + 2y$

$$C_{\max} = \underline{\hspace{2cm}} \text{ at } \underline{\hspace{2cm}}$$

$$C_{\min} = \underline{\hspace{2cm}} \text{ at } \underline{\hspace{2cm}}$$

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Solve the following linear programming problem graphically.

9. A company makes two models of light fixtures, A and B, each of which must be assembled and packed. The time required to assemble model A is 12 minutes, and the time required to assemble model B is 18 minutes. It takes 2 minutes to package model A and 1 minute to package model B. Each week there is a maximum of 240 hours of assembly time available and a maximum of 20 hours of packing time available. If the profit on model A is \$6 and the profit on model B is \$7, then how many light fixtures of each type should be made each week for maximum profit? What is the maximum profit?

