

## Algebra II Worksheet #4 Unit 7 Selected Solutions

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.

$$y + 2 \geq 0$$

$$x - y \geq -3$$

$$x - 2y \leq 4$$

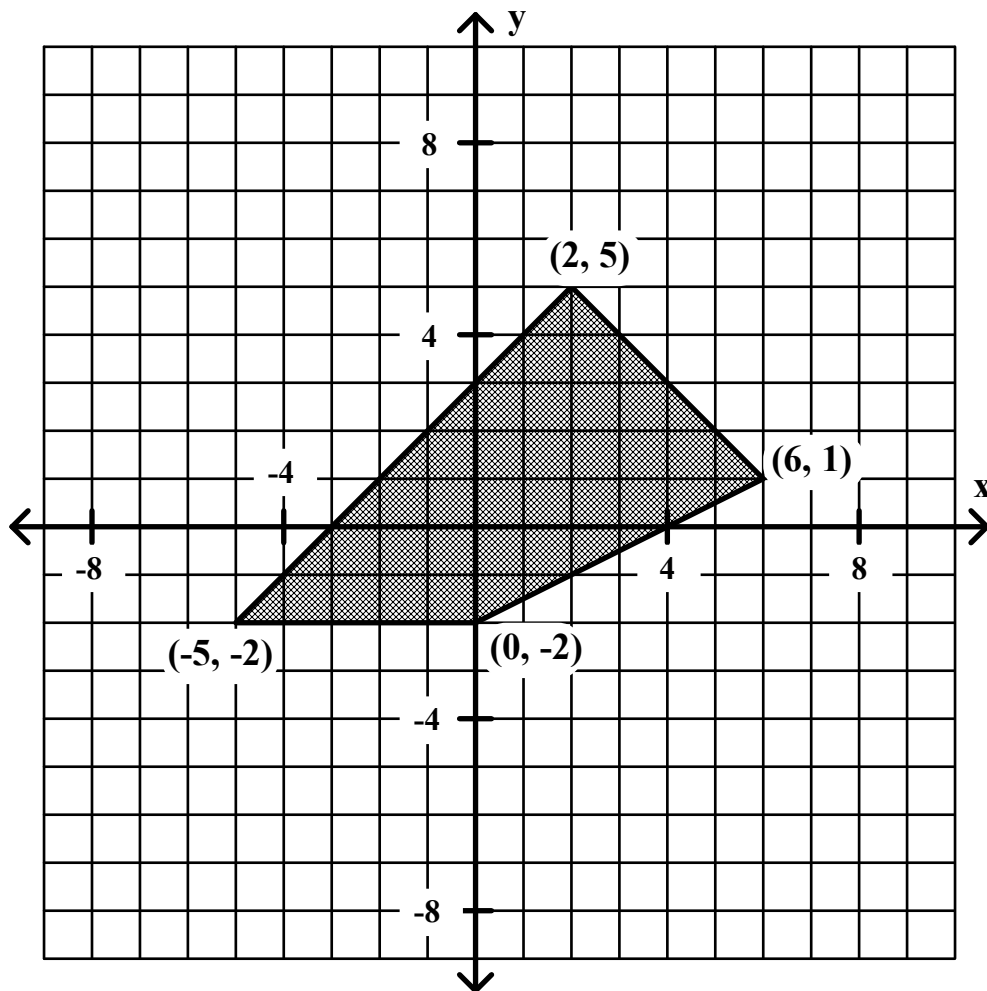
$$x + y \leq 7$$

$$y \geq -2$$

$$y \leq x + 3$$

$$y \geq \frac{1}{2}x - 2$$

$$y \leq -x + 7$$



5.  $C = 3x + y$

$$C_{\max} = \underline{19} \quad \text{at} \quad \underline{(6, 1)}$$

$$C_{\min} = \underline{-17} \quad \text{at} \quad \underline{(-5, -2)}$$

At (2,5)  $C = 6 + 5 = 11$   
 At (6,1)  $C = 18 + 1 = 19$  (max.)  
 At (0,-2)  $C = 0 + -2 = -2$   
 At (-5,-2)  $C = -15 + -2 = -17$  (min.)

6.  $C = -2x - 3y$

$$C_{\max} = \underline{16} \quad \text{at} \quad \underline{(-5, -2)}$$

$$C_{\min} = \underline{-19} \quad \text{at} \quad \underline{(2, 5)}$$

At (2,5)  $C = -4 - 15 = -19$  (min.)  
 At (6,1)  $C = -12 - 3 = -15$   
 At (0,-2)  $C = 0 - -6 = 6$   
 At (-5,-2)  $C = 10 - -6 = 16$  (max.)