

$$10.) \quad (x-5) - (y+4)^2 = 0$$

$$(y+4)^2 = |(x-5)|$$

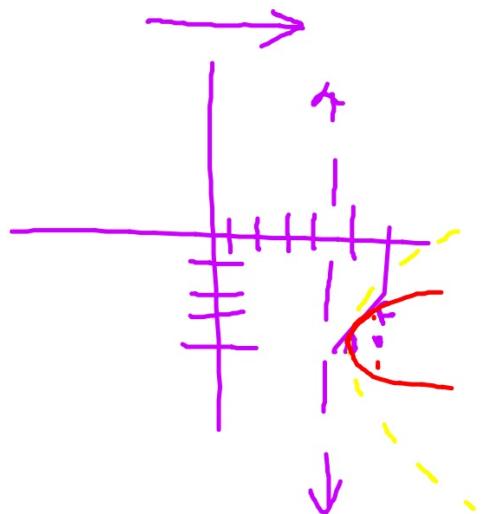
$$V: (5, -4)$$

$$4p = 1$$
$$p = \frac{1}{4}$$

$$F \left(5\frac{1}{4}, -4 \right)$$

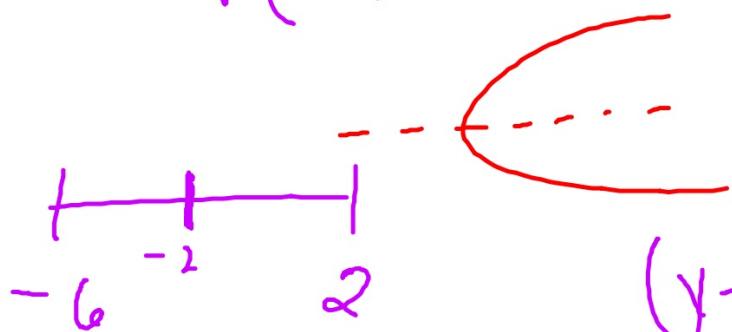
$$L.R. = 1$$

$$x = 4\frac{3}{4}$$

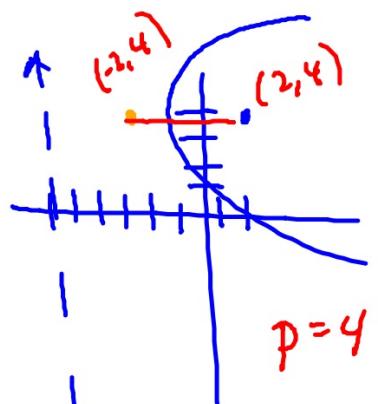


$$16.) F(2, 4) \text{ dir: } x = -6$$

$$V(-2, 4)$$



$$(y-4)^2 = 16(x+2)$$



$$4x^2 + y^2 = 25$$

$$2x + y = -1$$

$$5.) \quad x^2 - y^2 = 15 \quad x = 1-y$$
$$x + y = 1 \quad (8, -7)$$

$$(1-y)^2 - y^2 = 15$$
$$1 - 2y + y^2 - y^2 = 15$$
$$-2y = 14$$
$$y = -7$$
$$x = 1 - (-7)$$
$$x = 8$$

$$S.) \quad x^2 - y^2 = 15$$
$$x + y = 1 \quad y = 1 - x$$

$$x^2 - (1-x)^2 = 15$$
$$\cancel{x^2} - (1-2x+x^2) = 15$$
$$-1+2x=15$$
$$2x=16$$
$$x=8$$

③

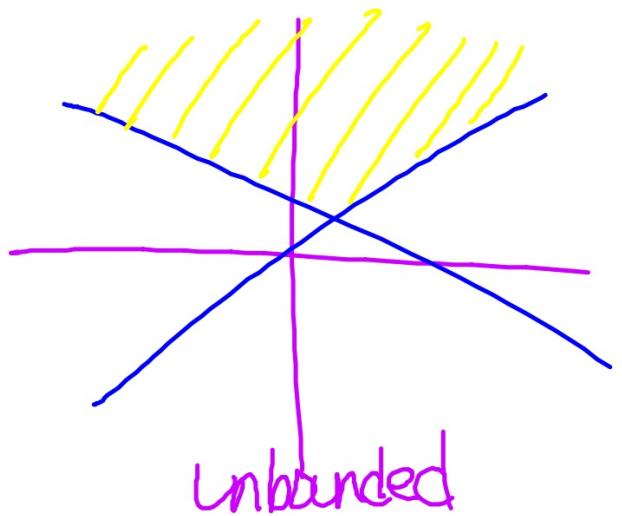
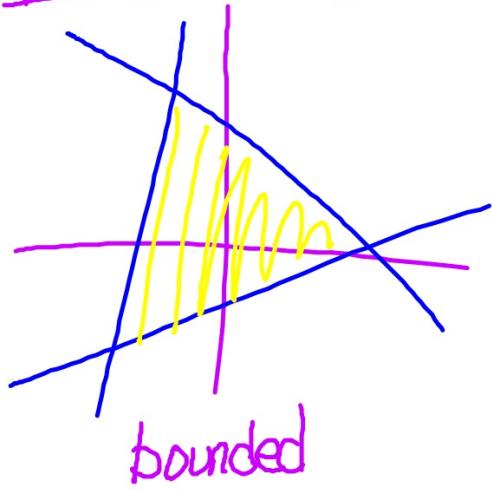
$$y = x^2$$
$$x^2 + y^2 = 12$$

$$y = x^2$$
$$-4 = x^2$$
$$\sqrt{3} = \sqrt{x^2}$$
$$\pm\sqrt{3} = x$$

$$\begin{array}{r} - (x^2 & -y = 0) \\ x^2 + y^2 & = 12 \\ \hline + -x^2 & +y = 0 \end{array}$$
$$\begin{array}{l} (\sqrt{3}, 3) \\ (-\sqrt{3}, 3) \end{array}$$
$$\begin{array}{l} y^2 + y = 12 \\ y^2 + y - 12 = 0 \\ (y+4)(y-3) = 0 \\ \hline (-4) \\ (; 3) \end{array}$$

Optimization (linear programming)

Feasible region



Constraint: formula used to determine the maximum or minimum values

1) Find the max and min values of the feasible region with the given constraints.

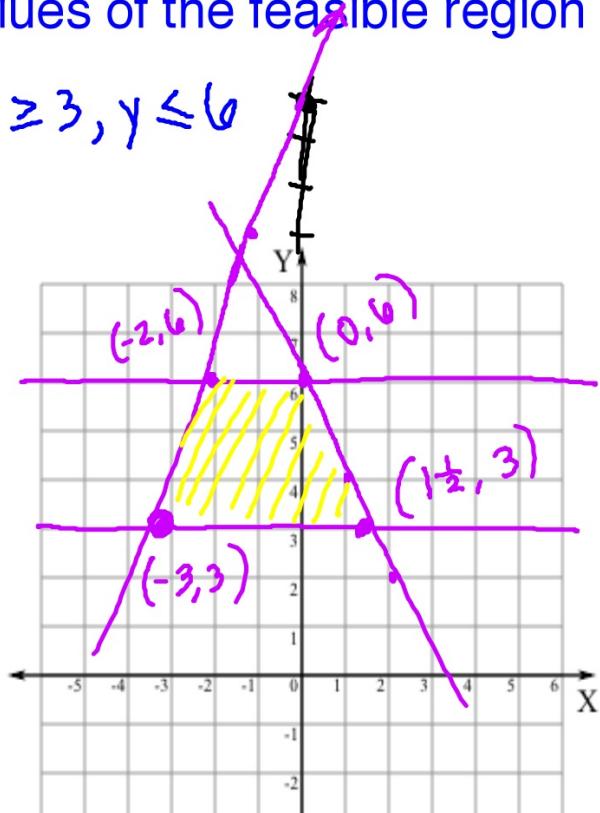
$$3 \leq y \leq 6 \leftarrow y \geq 3, y \leq 6$$

$$y \leq 3x + 12$$

$$y \leq -2x + 6$$

$$f(x,y) = 4x - 2y$$

constraint



$f(x,y) = 4x - 2y$	
$(-2, 6)$	$-8 - 12 = \boxed{-20}$ min
$(0, 6)$	$0 - 12 = -12$
$(-3, 3)$	$-12 - 6 = -18$
$(1.5, 3)$	$4\left(\frac{3}{2}\right) - 2(3) = \boxed{0}$ max