

10.7 Solving and Graphing Quadratic Systems

Ex. 1

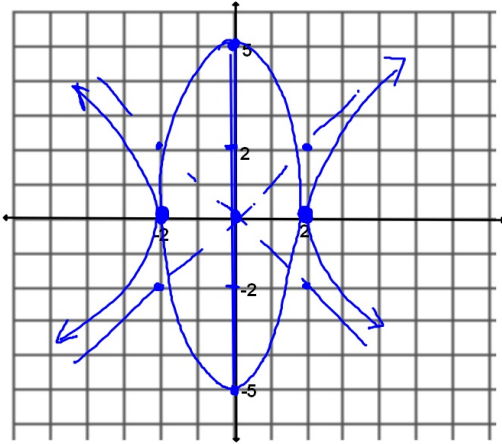
Solve and graph:

$$25x^2 + 4y^2 = 100$$

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

ellipse $\frac{x^2}{4} + \frac{y^2}{25} = 1$

hyperbola $\frac{x^2}{4} - \frac{y^2}{4} = 1$



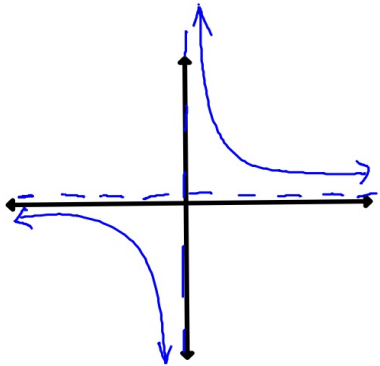
$$29x^2 = 116$$

$$(2, 0) \quad x^2 = 4$$

$$(-2, 0) \quad x = \pm 2$$

2

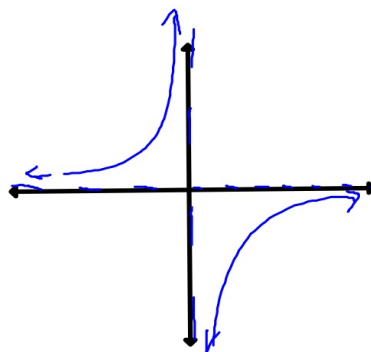
$xy = k$ graphs a hyperbola with x -axis and y -axis as asymptotes



$$xy = k, k > 0$$

$$(+)(+) = +$$

$$(-)(-) = +$$



$$xy = k, k < 0$$

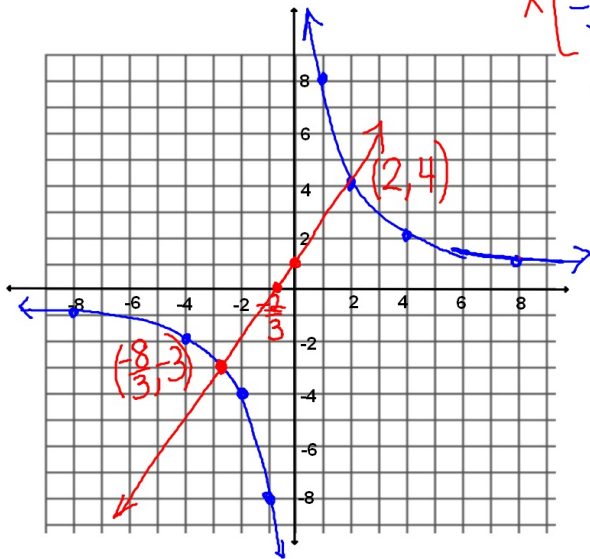
$$(-)(+) = -$$

$$(+)(-) = -$$

Ex. 2

Solve and graph: $xy = 8$

hyperbola $y = \frac{8}{x}$
 $-3x + 2y = 2$ → line
 $2y = 3x + 2$
 $y = \frac{3}{2}x + 1$
 $x \left[-3x + 2\left(\frac{8}{x}\right) = 2 \right]$



$-3x^2 + 16 = 2x$

$0 = 3x^2 + 2x - 16$

$0 = (3x + 8)(x - 2)$

$x = -8/3$ OR $x = 2$
 $(-8/3)y = 8$ $y = 4$
 $(y = -3)$ $(2, 4)$
 $(-8/3, -3)$