10.7 Solving and Graphing Quadratic Systems

Ex. 1 *Solve and graph:* $25x^2 + 4y^2 = 100$

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

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

$29x^2 = 116$

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

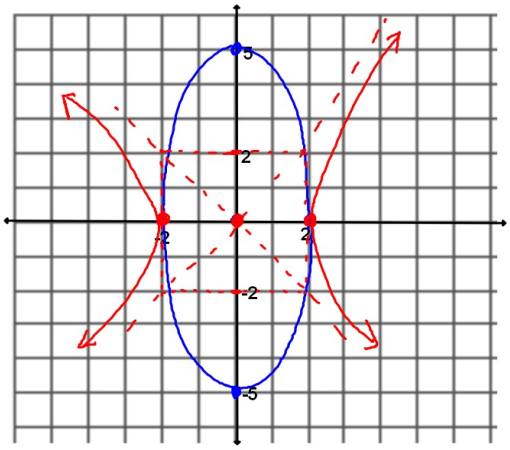
$x^2 = 4$

$x = \pm 2$

$x = \pm 2$: $4 - y^2 = 4$

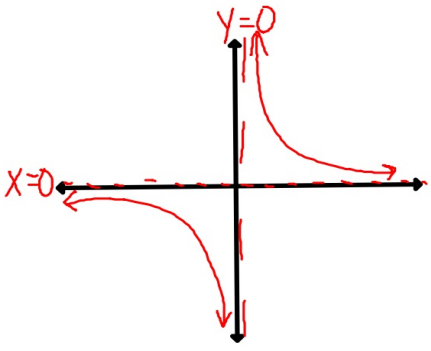
$y = 0$

$(2, 0)$ $(-2, 0)$

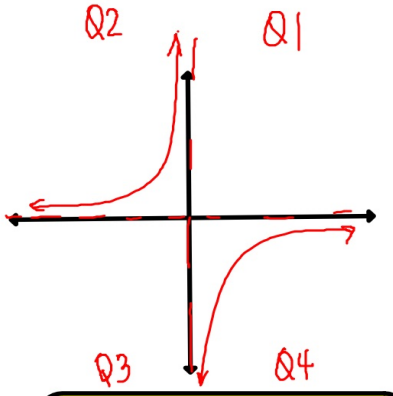


$K \neq 0$

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



xy = k **, *k* > 0**

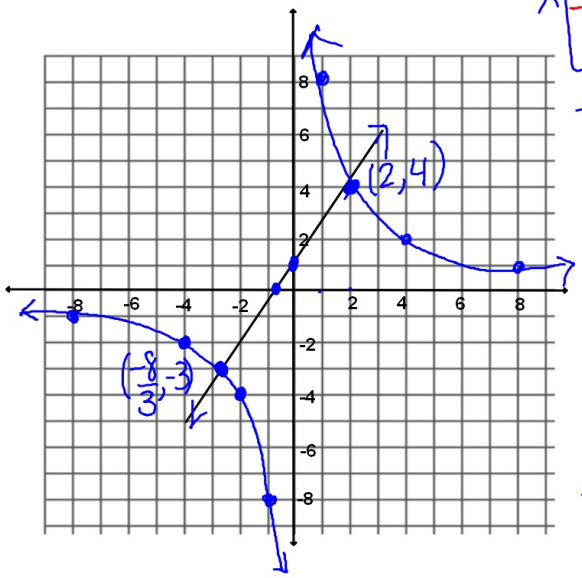


xy = k **, *k* < 0**

$Ax^2 + Bxy + Cy^2 + Dx + Ey + F = 0$

Ex. 2 **Solve and graph:** $xy = 8$ $\longrightarrow$ $y = 8/x$

$-3x + 2y = 2$



$x\left[-3x + 2\left(\frac{8}{x}\right) = 2\right]$

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

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

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

$x = -\frac{8}{3}$ or 2

y

$-\frac{8}{3}(-3) = 8$ $y = -3$ or 4 $2y = 8$

$(-8/3, -3)$ $(2,4)$