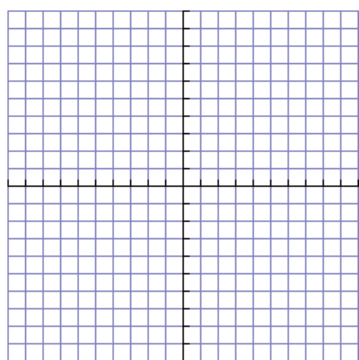


# Conics Worksheet 3: Hyperbolas

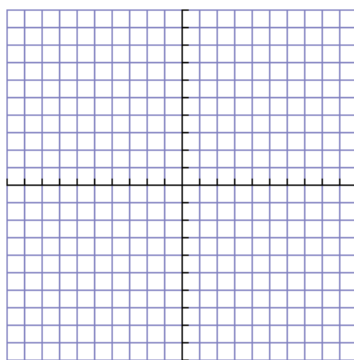
Name: \_\_\_\_\_

I. Write each of the following equations in graphing form (if not in that form already) and give the key information (center, vertices, foci and asymptotes).

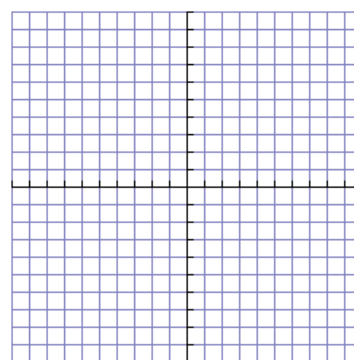
1)  $\frac{x^2}{25} - \frac{y^2}{9} = 1$



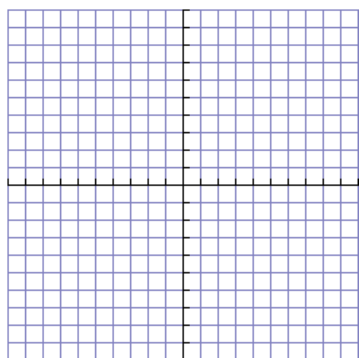
2)  $\frac{(y+2)^2}{4} - \frac{x^2}{25} = 1$



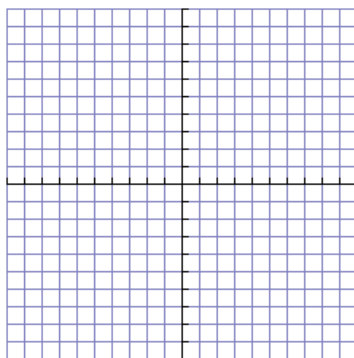
3)  $x^2 - \frac{y^2}{9} = 1$



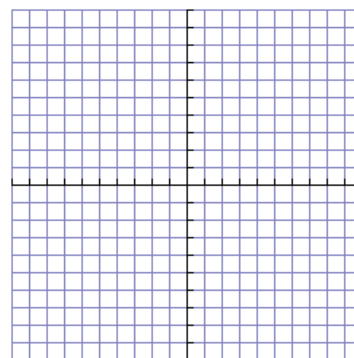
4)  $16y^2 - 9x^2 = 144$



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



6)  $y^2 - x^2 + 4y - 21 = 0$



II. Convert each equation to graphing form. Give the key information.

7)  $x^2 - y^2 - 6x = 0$

8)  $16x^2 - y^2 + 32x + 6y + 39 = 0$

9)  $4y^2 - 25x^2 - 32y + 164 = 0$

10)  $9y^2 - 4x^2 - 18y + 24x - 63 = 0$

III. Write the equation of the hyperbola in graphing form from the given information.

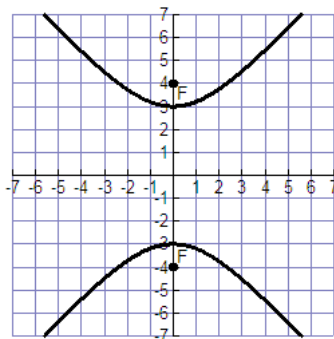
11) Vertices at  $(2, 0)$  and  $(-2, 0)$ ; foci at  $(3, 0)$  and  $(-3, 0)$

12) Vertices at  $(9, -3)$  and  $(-5, -3)$ ; foci at  $(2 \pm \sqrt{53}, -3)$

13) Center at the origin, vertex at  $(-3, 0)$  and an asymptote with the equation  $y = \frac{5}{3}x$

14) Vertices at  $(0, 6)$  and  $(0, -6)$ ; and an asymptote with the equation  $y = 3x$

15) From the graph: a)



b)

