

Determine the center, the vertices of the transverse axis, the conjugate axis points, the foci, and the asymptotes. Graph the center, the vertices, a line through the transverse axis, the conjugate axis, the foci, and the asymptotes. Then sketch the shape of the branches. All non-integer values should be rounded to the nearest hundredth.

1. $\frac{y^2}{16} - \frac{(x-3)^2}{4} = 1$

Center (,)

$a =$ _____

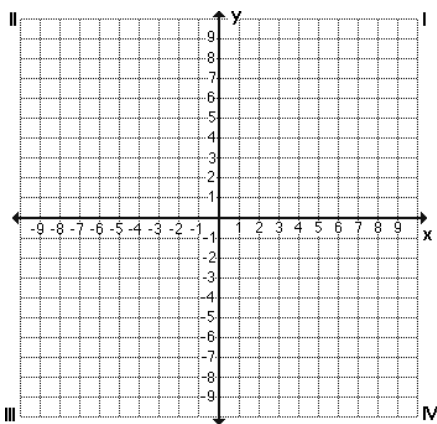
Vertices (,) (,)

$b =$ _____

$c =$ _____

Foci (,) (,)

Asymptotes: _____



2. $\frac{(y-4)^2}{25} - \frac{x^2}{9} = 1$

Center (,)

$a =$ _____

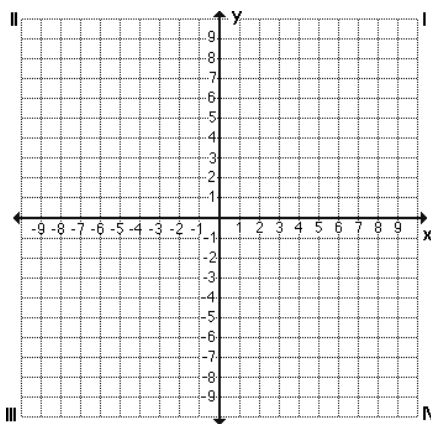
Vertices (,) (,)

$b =$ _____

$c =$ _____

Foci (,) (,)

Asymptotes: _____



3. $\frac{(y+2)^2}{16} - \frac{(x-3)^2}{1} = 1$

Center (,)

$a =$ _____

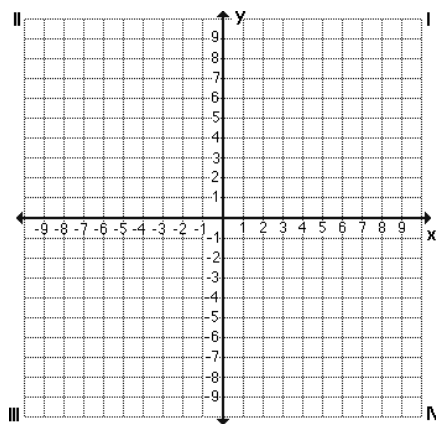
Vertices (,) (,)

$b =$ _____

$c =$ _____

Foci (,) (,)

Asymptotes: _____



4.

$$\frac{(x-2)^2}{9} - \frac{(y+5)^2}{1} = 1$$

Center (,)

$a =$ _____

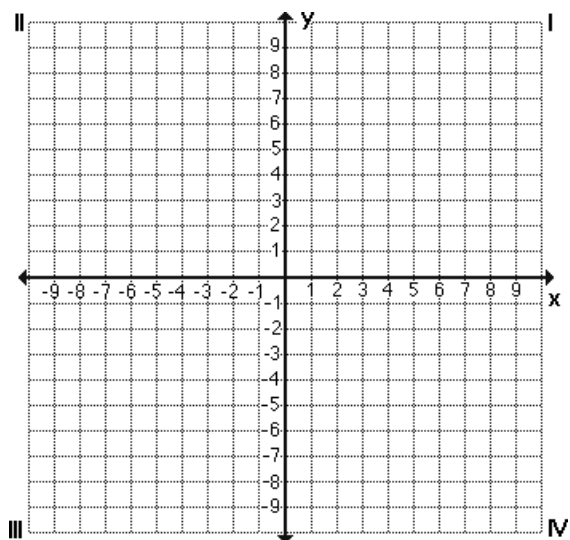
Vertices (,) (,)

$b =$ _____

$c =$ _____

Foci (,) (,)

Asymptotes: _____



5.

$$\frac{x^2}{16} - \frac{(y+6)^2}{9} = 1$$

Center (,)

$a =$ _____

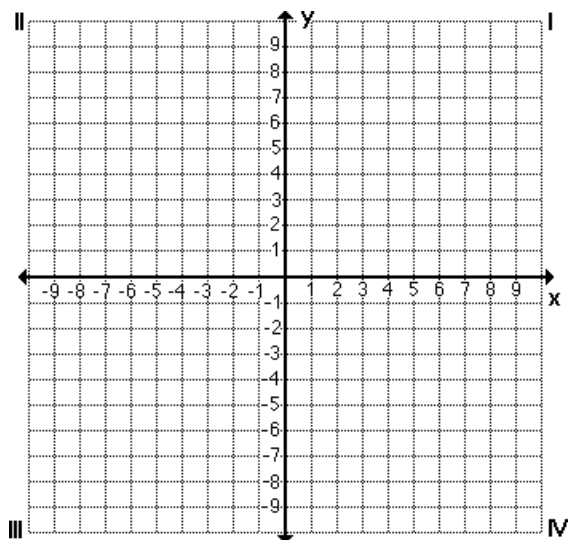
Vertices (,) (,)

$b =$ _____

$c =$ _____

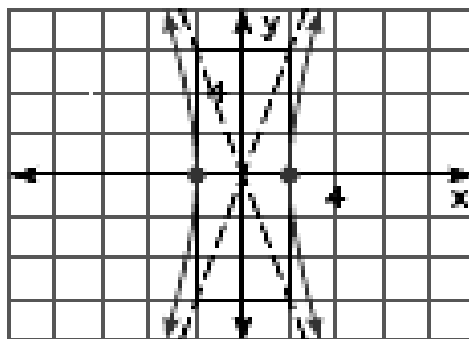
Foci (,) (,)

Asymptotes: _____



6. The following equation was graphed incorrectly. Use the graph to determine and explain the error.

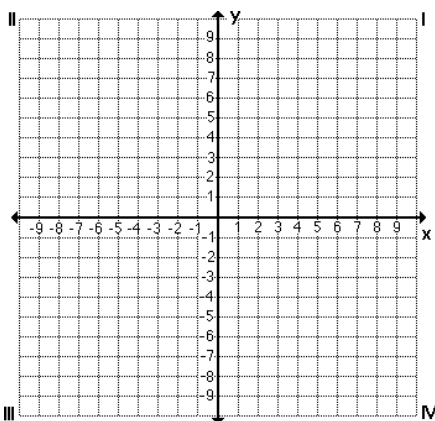
$$\frac{y^2}{36} - \frac{x^2}{4} = 1$$



Draw the graph and Find an equation of the hyperbola given the following information.

7. Foci $(0, -4)$ $(0, 4)$

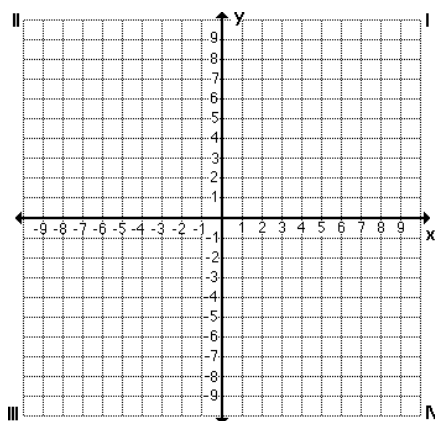
Vertices: $(0, -2)$ $(0, 2)$



Equation: _____

8. Foci $(-6, 0)$ $(6, 0)$

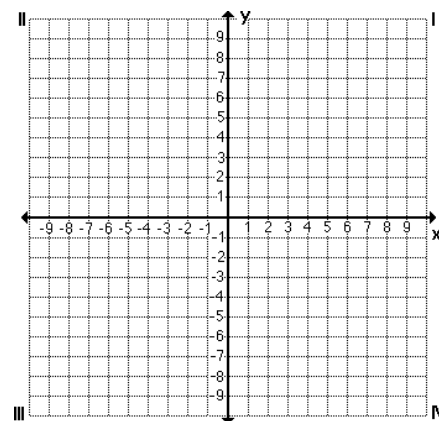
Vertices: $(-3, 0)$ $(3, 0)$



Equation: _____

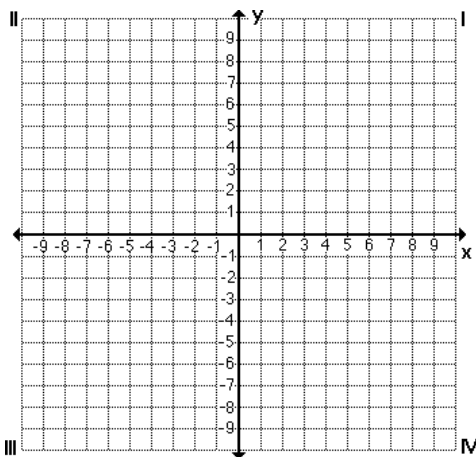
9. Foci $(0, \sqrt{13})$ $(0, -\sqrt{13})$

Vertices: $(0, -3)$ $(0, 3)$



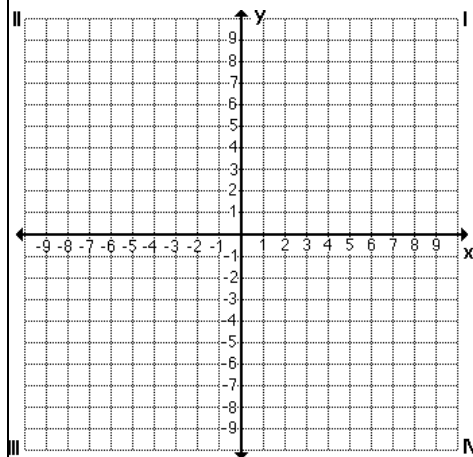
Equation: _____

10. Center at $(-6, 3)$, Vertex at $(-6, 7)$ and focus at $(-6, 8)$.



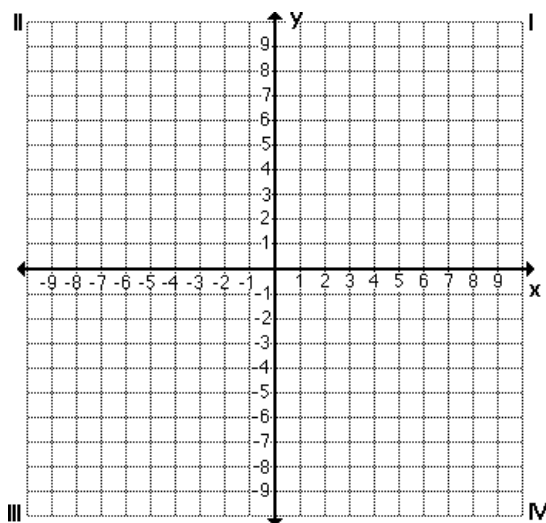
Equation: _____

11. . Center at $(0, 2)$, Vertex at $(4, 2)$ and focus at $(5, 2)$.



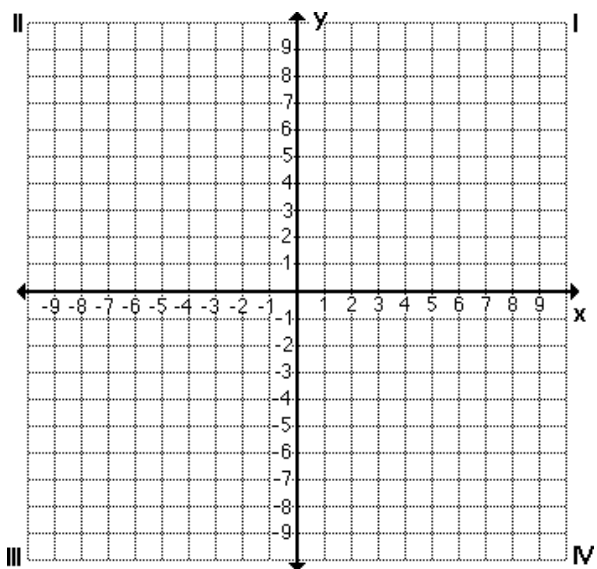
Equation: _____

12. Graph the hyperbola and find the equation of the hyperbola that has center at the origin and asymptotes $y = \pm \frac{3}{4}x$.



Equation: _____

13. Graph the hyperbola and find the equation of the hyperbola that has center at the origin and asymptotes $y = \pm \frac{5}{2}x$.



Equation: _____