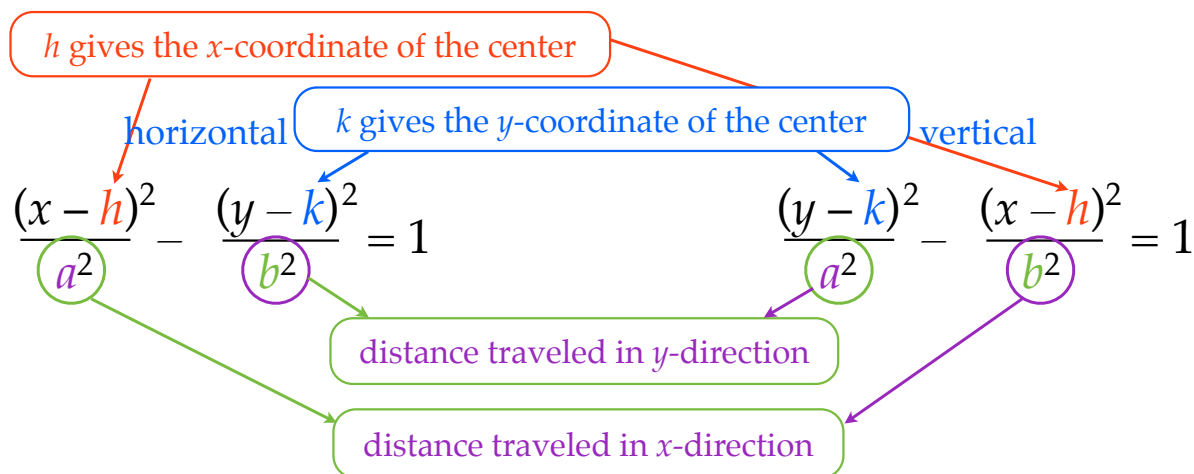


Equation of a **Hyperbola**  
with center  $(h,k)$



Equation of a **Hyperbola**

$$\begin{array}{cc} \text{horizontal} & \text{vertical} \\ \frac{(x-h)^2}{a^2} - \frac{(y-k)^2}{b^2} = 1 & \frac{(y-k)^2}{a^2} - \frac{(x-h)^2}{b^2} = 1 \end{array}$$

Given the equation of a hyperbola, determine if the hyperbola is **horizontal** or **vertical**, label  $h$ ,  $k$ ,  $a$  and  $b$ , the distance traveled in  $x$  and  $y$  directions.

$$\frac{(x-1)^2}{32} - \frac{(y-1)^2}{8} = 1 \qquad \frac{(y+3)^2}{24} - \frac{(x-6)^2}{12} = 1 \qquad \frac{(x-1)^2}{48} - \frac{(y+4)^2}{72} = 1$$

Graph the following hyperbola

$$\frac{x^2}{12} - \frac{y^2}{4} = 1$$

Horizontal/ Vertical

Center

Slope of Asymptotes

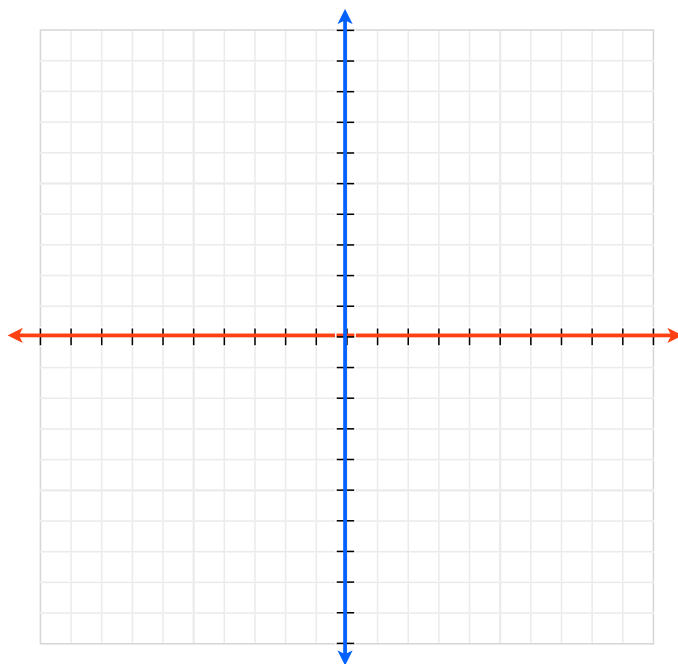
Vertices

Co-Vertices

Foci

Domain

Range



Graph the following hyperbola

$$\frac{(y-1)^2}{20} - \frac{(x-2)^2}{16} = 1$$

Horizontal/ Vertical

Center

Slope of Asymptotes

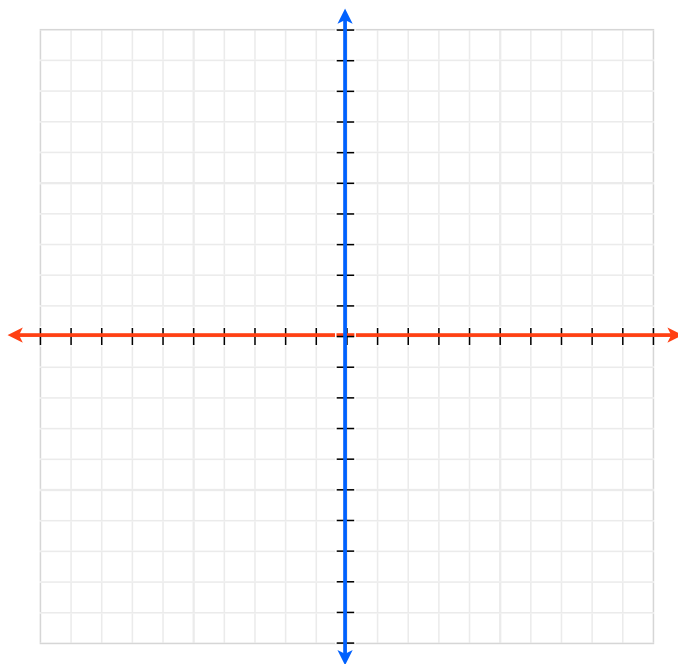
Vertices

Co-Vertices

Foci

Domain

Range



Graph the following hyperbola

$$\frac{(x + 3)^2}{4} - \frac{(y + 1)^2}{9} = 1$$

Horizontal/Vertical

Center

Slope of Asymptotes

Vertices

Co-Vertices

Foci

Domain

Range

