



9-4 Additional Practice

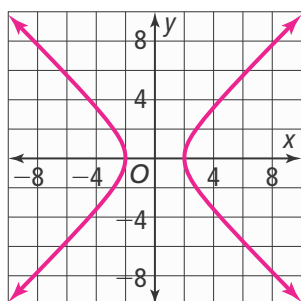
Hyperbolas

Write an equation for the hyperbola with the given information.

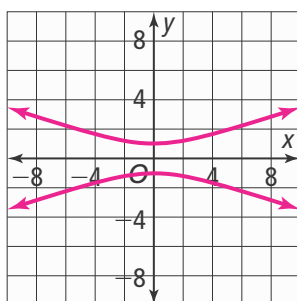
- foci at (6, 0) and (−6, 0) and a constant difference of 10 $\frac{x^2}{25} - \frac{y^2}{11} = 1$
- foci at (3, 0) and (−3, 0) and a constant difference of 4 $\frac{x^2}{4} - \frac{y^2}{5} = 1$

Graph each hyperbola.

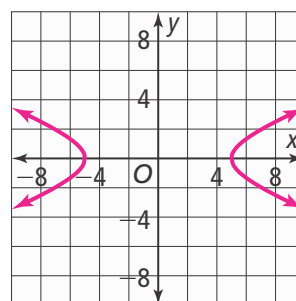
3. $\frac{x^2}{4} - \frac{y^2}{4} = 1$



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



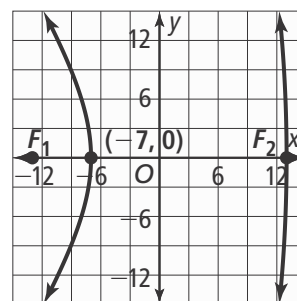
5. $\frac{x^2}{25} - \frac{y^2}{4} = 1$



Write an equation for the hyperbola with the given information.

- vertices at (4, 0) and (−4, 0) and asymptotes $y = \pm \frac{3}{2}x$. $\frac{x^2}{16} - \frac{y^2}{36} = 1$
- vertices at (0, 5) and (0, −5) and asymptotes $y = \pm \frac{5}{7}x$. $\frac{y^2}{25} - \frac{x^2}{49} = 1$
- The graph shows a two-dimensional side view of a satellite dish and the small reflector inside it. The vertex of the small reflector is 6 in. from focus F_1 and 20 in. from focus F_2 . What equation best models the small reflector?

$$\frac{x^2}{49} - \frac{y^2}{120} = 1$$



Which conic section is represented by each equation?

- $3x^2 + 6x + 5y^2 - 20y - 13 = 0$ **ellipse**
- $x^2 - 9y^2 + 36y - 45 = 0$ **hyperbola**
- $x^2 + y^2 - 8x - 4y + 19 = 0$ **circle**
- Describe how you can find the asymptotes when you know the a and c values for a vertical hyperbola. **Use the equation $c^2 = a^2 + b^2$ to find the value of b . Then substitute values of a and b in the equation $y = \pm \frac{a}{b}x$ to find the asymptotes.**