9-4 Additional Practice

Hyperbolas

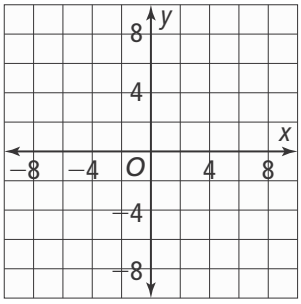
Write an equation for the hyperbola with the given information.

1. foci at (6, 0) and (–6, 0) and a constant difference of 10

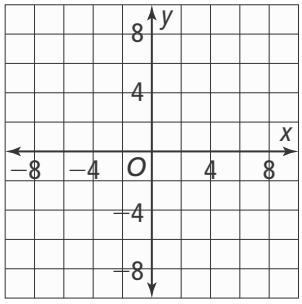
2. foci at (3, 0) and (–3, 0) and a constant difference of 4

Graph each hyperbola.

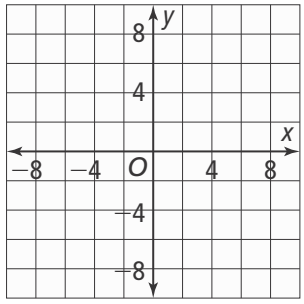
3. $\frac{x^2}{4} - \frac{y^2}{4} = 1$



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



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

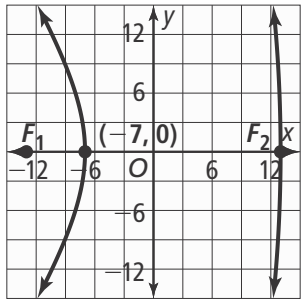


Write an equation for the hyperbola with the given information.

6. vertices at (4, 0) and (–4, 0) and asymptotes $y = \pm\frac{3}{2}x$.

7. vertices at (0, 5) and (0, –5) and asymptotes $y = \pm\frac{5}{7}x$.

8. 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?



Which conic section is represented by each equation?

9. $3x^2 + 6x + 5y^2 - 20y - 13 = 0$

10. $x^2 - 9y^2 + 36y - 45 = 0$

11. $x^2 + y^2 - 8x - 4y + 19 = 0$

12. Describe how you can find the asymptotes when you know the *a* and *c* values for a vertical hyperbola.

9-4 Additional Practice

Hyperbolas

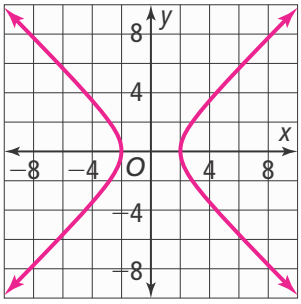
Write an equation for the hyperbola with the given information.

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

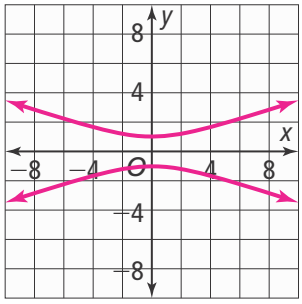
2. foci at (3, 0) and (–3, 0) and a constant difference of 4 $\frac{x^2}{4} - \frac{y^2}{5} = 1$

Graph each hyperbola.

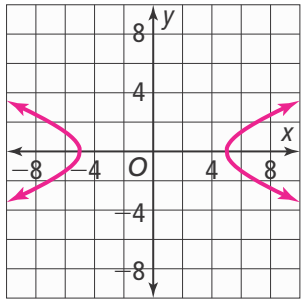
3. $\frac{x^2}{4} - \frac{y^2}{4} = 1$



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



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

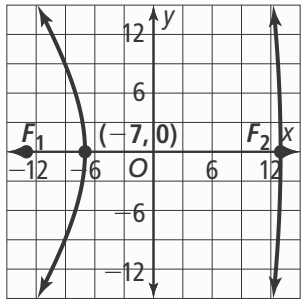


Write an equation for the hyperbola with the given information.

6. vertices at (4, 0) and (–4, 0) and asymptotes $y = \pm\frac{3}{2}x$. $\frac{x^2}{16} - \frac{y^2}{36} = 1$

7. vertices at (0, 5) and (0, –5) and asymptotes $y = \pm\frac{5}{7}x$. $\frac{y^2}{25} - \frac{x^2}{49} = 1$

8. 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?

9. $3x^2 + 6x + 5y^2 - 20y - 13 = 0$ ellipse

10. $x^2 - 9y^2 + 36y - 45 = 0$ hyperbola

11. $x^2 + y^2 - 8x - 4y + 19 = 0$ circle

12. 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.