

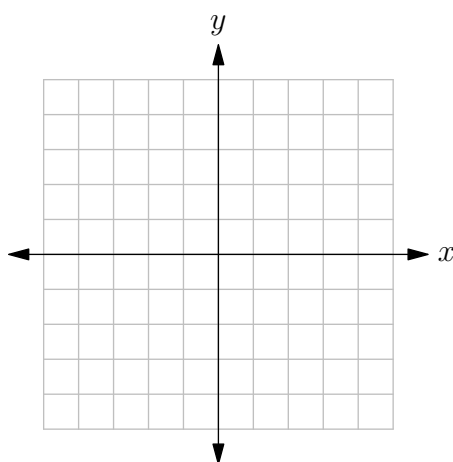
# Hyperbolas

Review: solve the problem using a system of equations.

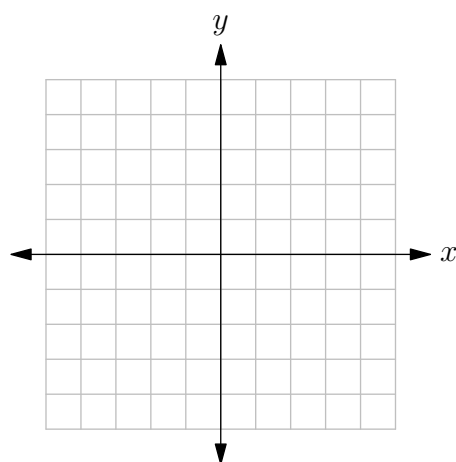
1. A plane makes a round-trip flight from New York to London. The plane's speed on the trip there was 220 mph. Its speed on the way back was 200 mph. The trip over was one hour shorter than the trip back. How many hours did the entire trip take?

Find the vertices, foci, and equations of the asymptotes. Then draw the graph.

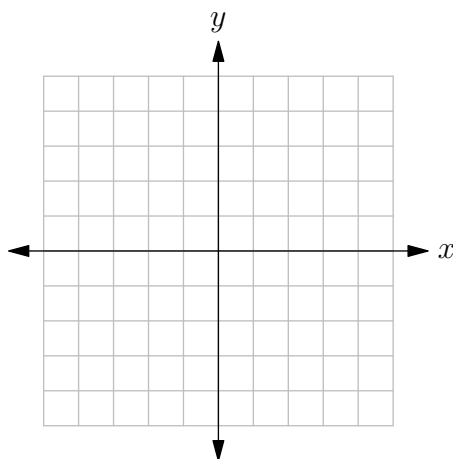
2.  $9x^2 - y^2 = 9$



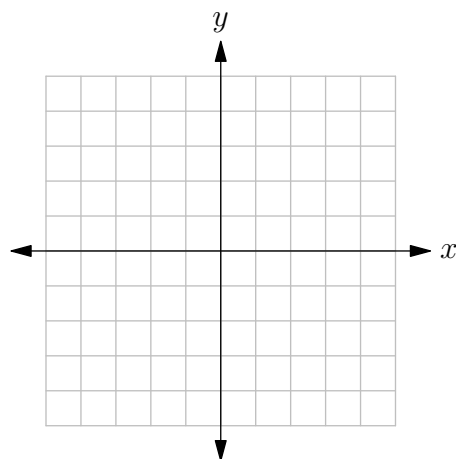
4.  $y^2 - x^2 = 3$



3.  $y^2 - 4x^2 = 4$



5.  $4x^2 - 2y^2 = 1$



6. Find the equation of the hyperbola centered at the origin with vertices  $(\pm 1, 0)$  and foci  $(\pm 2, 0)$ .

## ANSWERS

1. 10 hours
2. Vertices:  $(\pm 1, 0)$ , foci:  $(\pm 3.16, 0)$ ,  
asymptotes:  $y = \pm 3x$
3. Vertices:  $(0, \pm 2)$ , foci:  $(0, \pm 2.24)$ ,  
asymptotes:  $y = \pm 2x$
4. Vertices:  $(0, \pm 1.73)$ , foci:  $(0, \pm 2.45)$ ,  
asymptotes:  $y = \pm x$
5. Vertices:  $(\pm 0.5, 0)$ , foci:  $(\pm 0.87, 0)$ ,  
asymptotes:  $y = \pm 1.41x$
6.  $3x^2 - y^2 = 3$