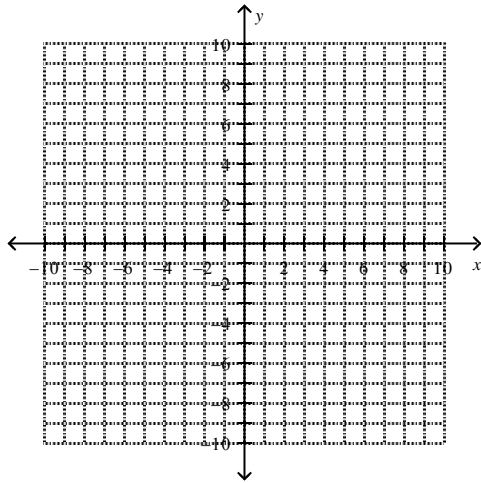


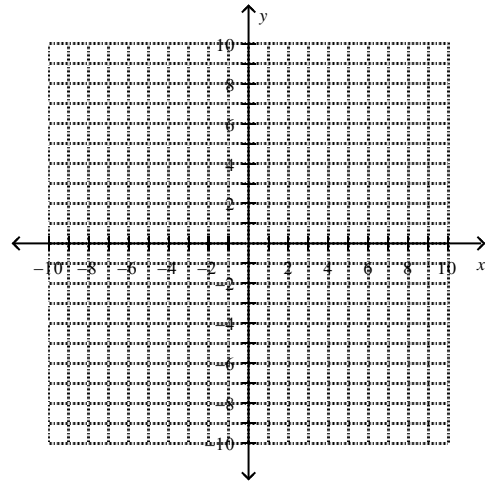
# Hyperbolas HW Lesson 4

Sketch the graph of the hyperbola.

1.  $\frac{(x-2)^2}{16} - \frac{(y+3)^2}{25} = 1$



2.  $25y^2 - 36x^2 = 900$



Find the foci of each hyperbola.

3.  $\frac{y^2}{81} - \frac{x^2}{16} = 1$

4.  $\frac{x^2}{64} - \frac{y^2}{36} = 1$

Find the equation of the hyperbola with the given values. Assume the transverse axis is horizontal.

5.  $b = 10, c = 50$

6.  $a = 26, c = 40$

Write the equation of a hyperbola with the given foci and vertices.

7. foci  $(\pm 5, 0)$ , vertices  $(\pm 3, 0)$

8. foci  $(0, \pm 13)$ , vertices  $(0, \pm 5)$

**Write the equation of a hyperbola with the given information. Sketch the graph and place the center of each hyperbola at the origin.**

9. Transverse axis is vertical and is 10 units;  
central rectangle is 10 units by 4 units.

10. Perimeter of central rectangle is 16 units;  
vertices are at  $(0, 3)$  and  $(0, -3)$ .

**Write an equation of a hyperbola with the given characteristics.**

11. vertices  $(1, -3)$  and  $(-7, -3)$ , foci  $(2, -3)$   
and  $(-8, -3)$

12. vertices  $(4, -1)$  and  $(4, -5)$ , foci  $(4, 3)$  and  
 $(4, -9)$

**Rewrite the hyperbola in standard form by completing the square. Then identify the center and sketch the graph.**

13.  $x^2 - y^2 + 6x - 4y = 6$

14.  $4y^2 - 9x^2 - 24y = 72$

