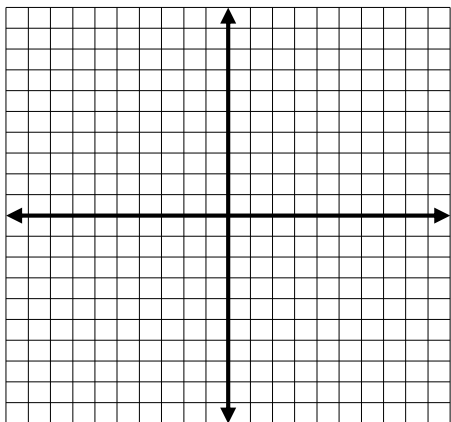


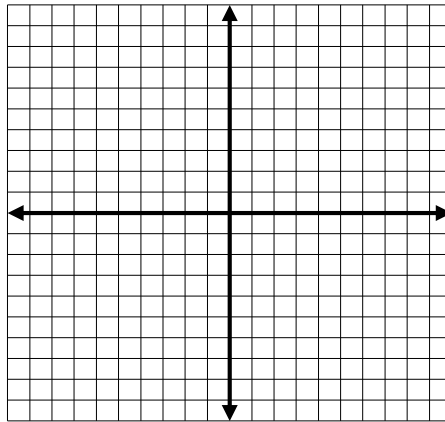
(#1-8) Graph each of the following. State the name of the conic and include:

- Circles: Center and radius
- Parabolas: Vertex, focus, directrix, focal width and direction it opens
- Ellipses: Center, endpoints of major and minor axes, and foci
- Hyperbolas: Center, vertices, slopes of asymptotes and foci

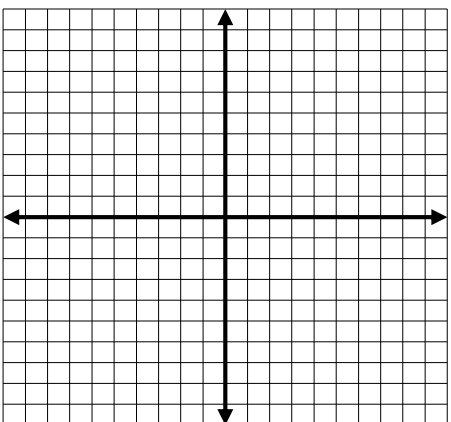
1. $x^2 + y^2 = 16$



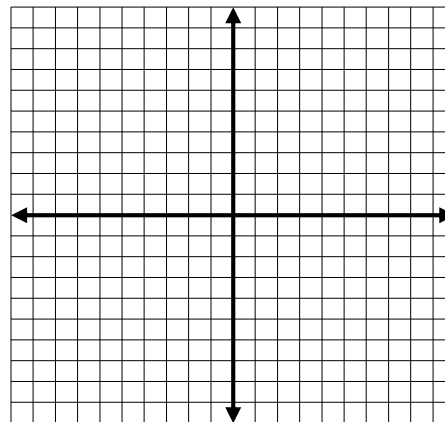
2. $x^2 = 8(y - 2)$



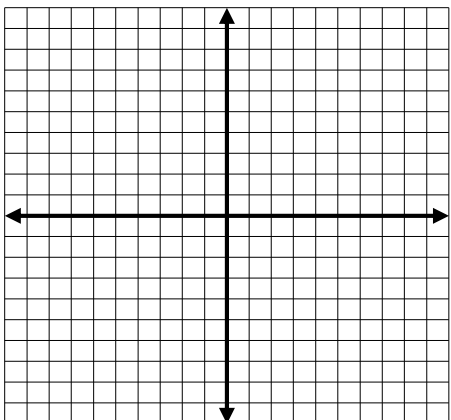
3. $\frac{x^2}{25} + \frac{y^2}{16} = 1$



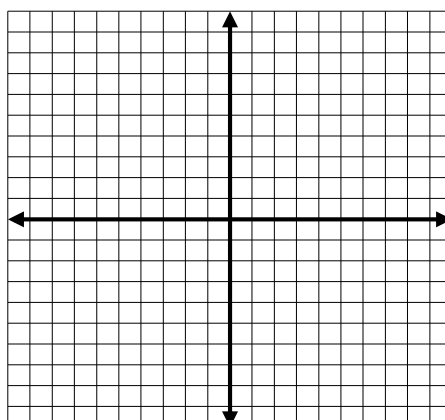
4. $\frac{x^2}{9} - \frac{y^2}{16} = 1$



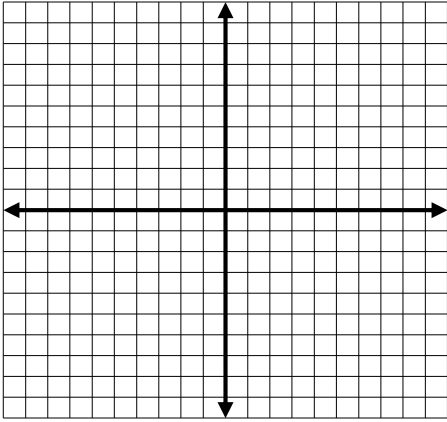
5. $(y + 2)^2 = -12(x + 3)$



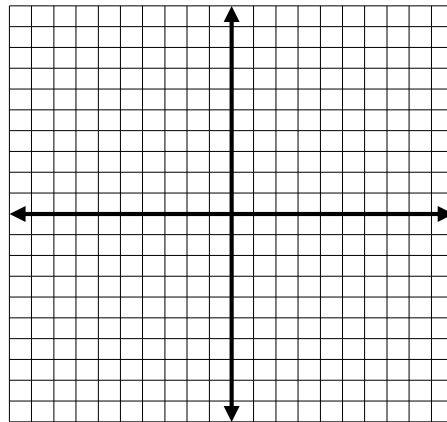
6. $\frac{(x - 3)^2}{12} + \frac{(y + 2)^2}{21} = 1$



7. $(x-3)^2 + (y+2)^2 = 9$



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



(#9-16) For each of the following, write an equation in general form.

9. Circle; center at $(-4,1)$; radius = 7

10. Circle; center at $(2,5)$; contains $(5,9)$

11. Parabola; vertex at $(0,2)$; directrix $x = -2$

12. Parabola opening up with a focus at $(-1,3)$ and focal width 12

13. Ellipse; foci at $(6,0)$ and $(-6,0)$; minor axis length = 16

14. Ellipse; foci at $(0,3)$ and $(0,-3)$; endpoints of major axis $(0,5)$ and $(0,-5)$

15. Hyperbola; foci at $(13,0)$ and $(-13,0)$; transverse axis length = 24

16. Hyperbola; vertices $(4,1)$ and $(-4,1)$; ends of conjugate axis at $(0,4)$ and $(0,-2)$

(#17-22) Identify the shape and convert the following equations to general form by completing the square, if necessary.

17. $x^2 - 6x + y^2 - 8y = 0$

18. $4y^2 - 9x^2 = 36$

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

20. $2x^2 + 3y^2 + 4x - 12y = 4$

21. $4x^2 - y^2 - 32x + 16y - 128 = 0$

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

(#23-24) Write parametric equations for each of the following.

23. A circle that is tangent to the x-axis at (5,0) and the y-axis at (0,5).

24. A hyperbola with standard equation

$$\frac{(y+2)^2}{9} - \frac{(x-3)^2}{16} = 1$$

(#25-26) Eliminate the parameter and identify the name of the conic section.

25. $x = 2 + 4 \cos t$
 $y = 3 + 3 \sin t$

26. $x = 4 \sec t + 2$
 $y = 3 \tan t + 3$