

Chapter One Review

Name: _____

In Problems 1 and 2, use a graphing utility to approximate the solutions of each equation rounded to two decimal places. All solutions lie between -10 and 10.

1. $-x^3 + 3x + 1 = 0$

$$\{-1.5, -0.35, 1.88\}$$

2. $-x^4 + 7 = x^2 - 2$

$$\{1.6, -1.6\}$$

In Problems 3 and 4, find the following for each pair of points:

(a) The distance between the points

(b) The midpoint of the line segment connecting the points

3. $(0, 0); (-4, 6)$ $(-2, 3)$

$$\begin{aligned} &\sqrt{6^2 + (-4)^2} \\ &\sqrt{36 + 16} \\ &\sqrt{52} \end{aligned}$$

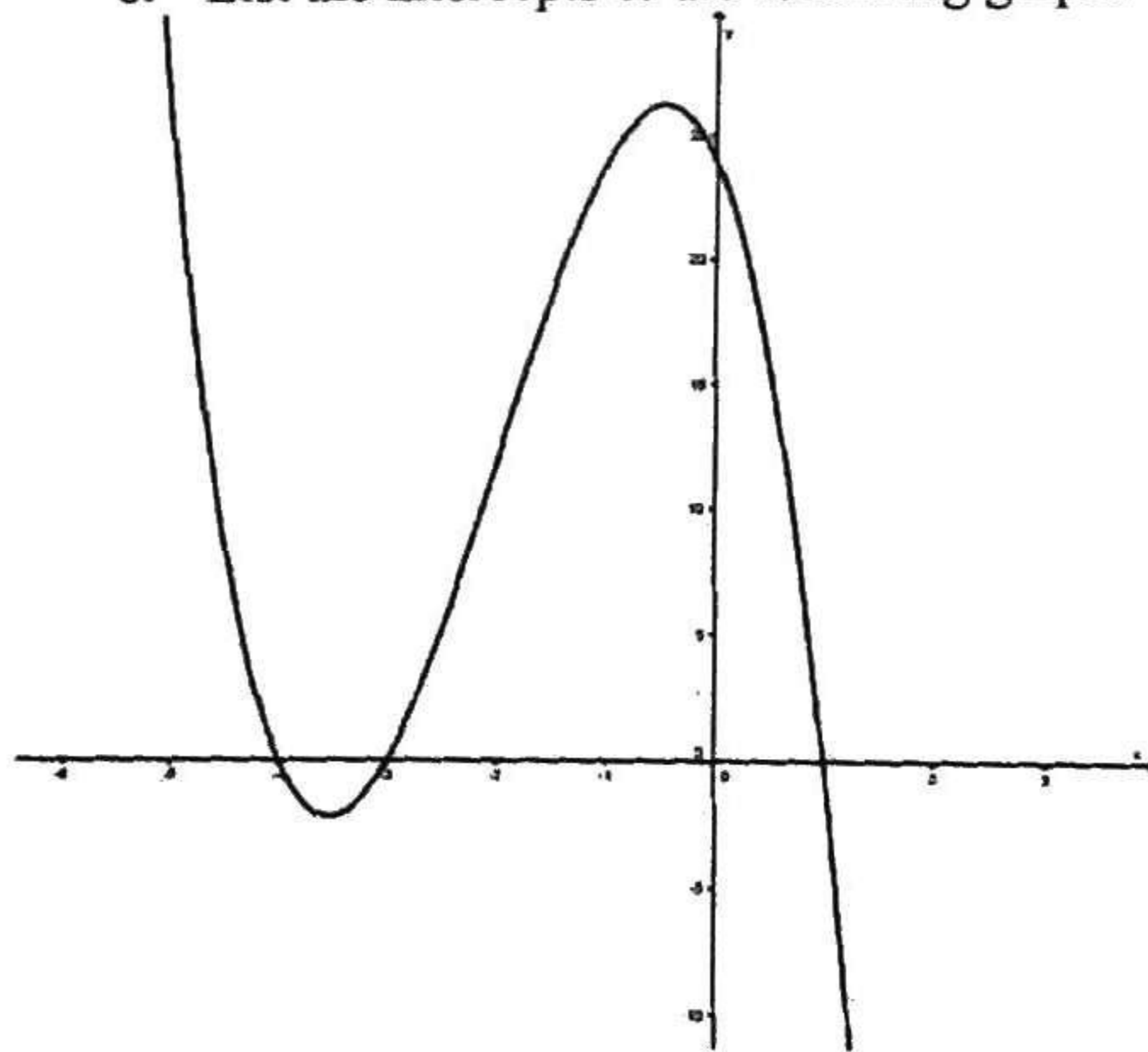
4. $(-2, 2); (1, 4)$

$$\begin{aligned} &\sqrt{(1 - (-2))^2 + (4 - 2)^2} \\ &\sqrt{(3)^2 + (2)^2} \\ &\sqrt{9 + 4} \\ &\sqrt{13} \end{aligned}$$

5. Graph $y = 2x^2 - 15$ using a graphing utility. Create a table of values to determine a good initial viewing window. Approximate the intercepts using a graphing utility.

$$\{-2.7, 2.7\}$$

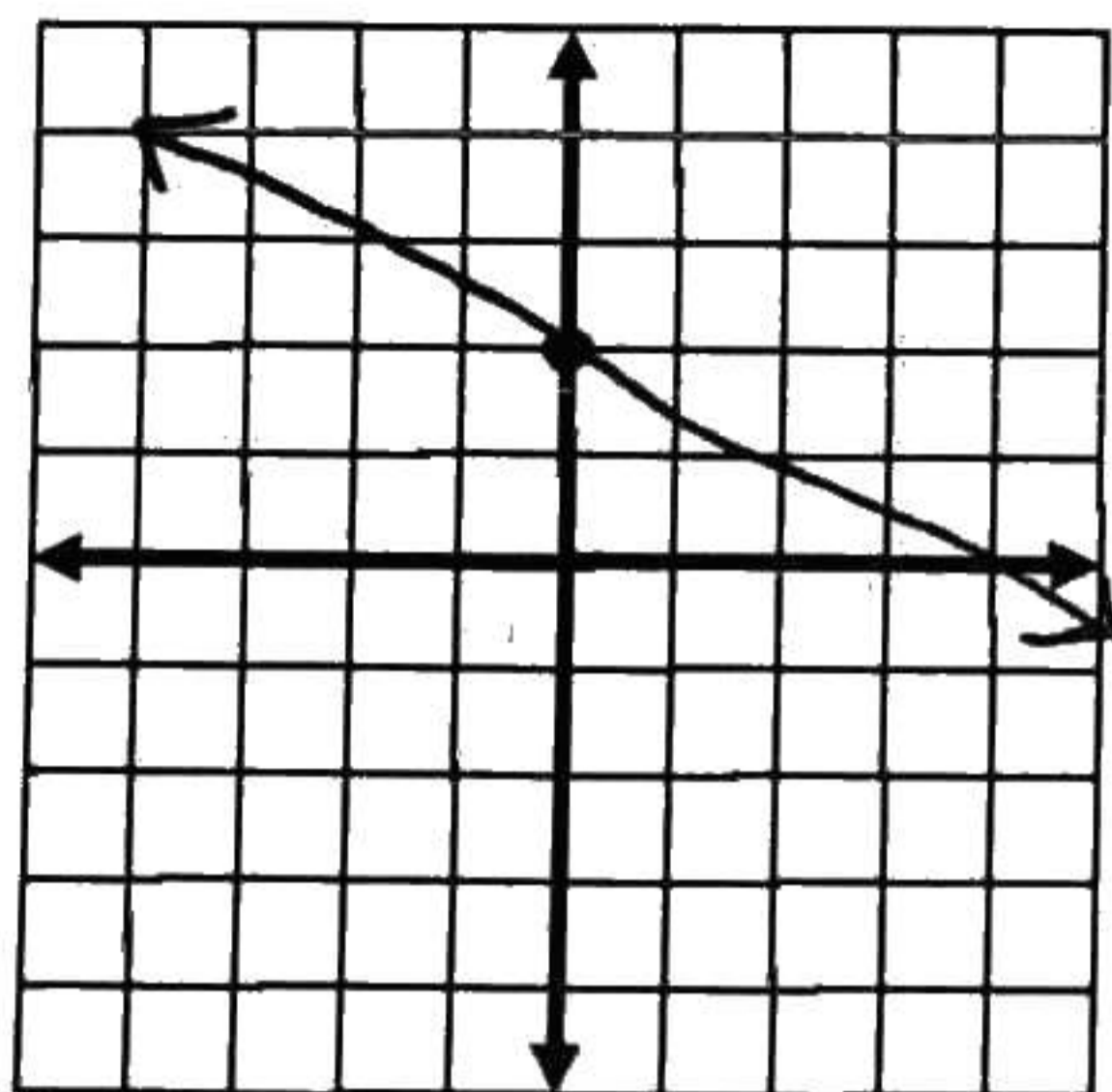
6. List the intercepts of the following graph.



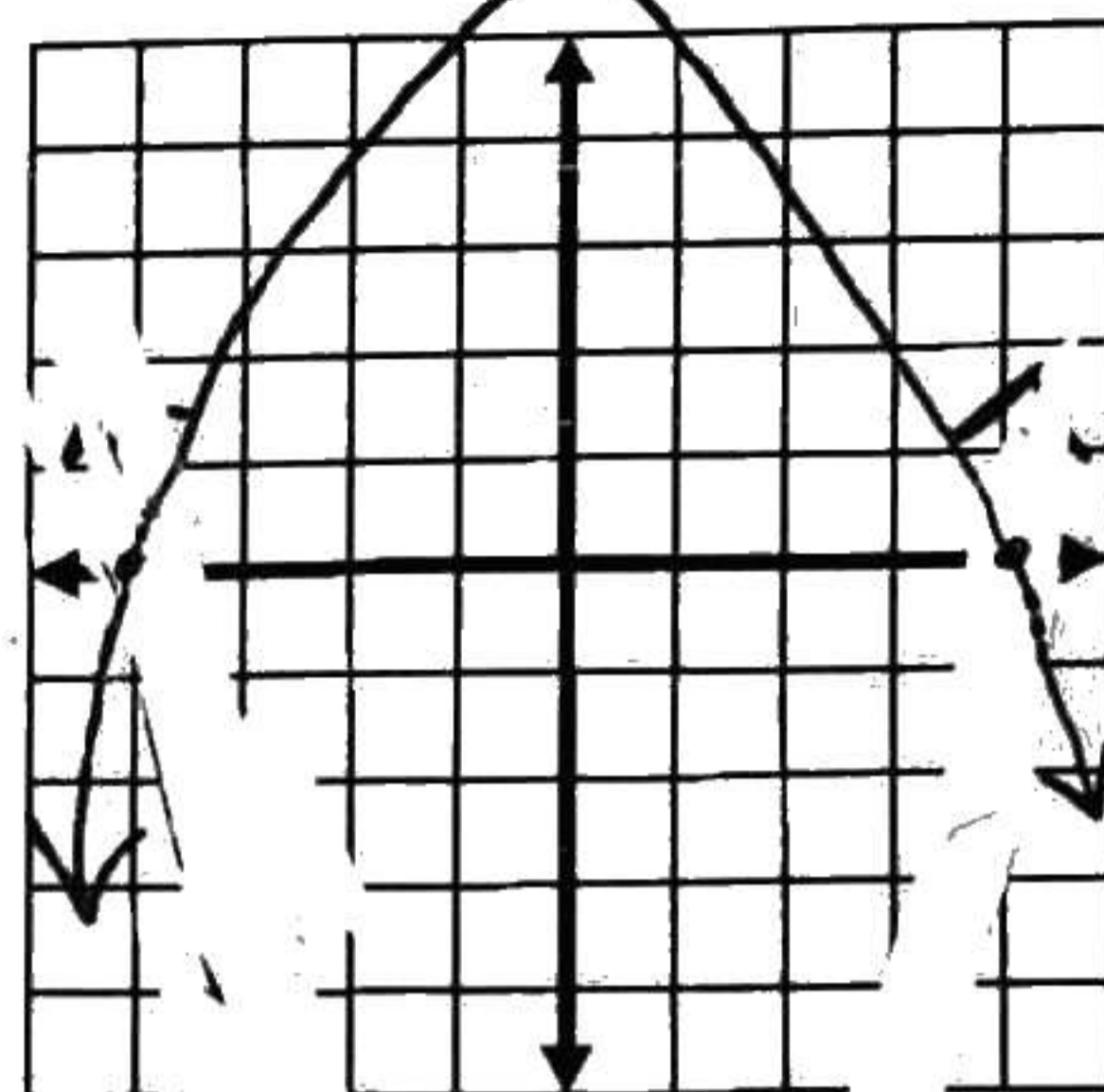
$$\{-4, -3, 1\}$$

In Problems 7 and 8, graph each equation by hand by plotting points. Verify your results using a graphing utility. Approximate the intercepts using a graphing utility and label them on the graph.

7. $x + 2y = 4$



8. $x^2 + 2y = 16$ $y = \frac{1}{2}x^2 - 8$



In Problems 9 - 12, list the intercepts and test for symmetry with respect to the x-axis, the y-axis, and the origin.

9. $y = 5x$

$(0, 0)$
origin

10. $9x^2 - y^2 = 9$

$(1, 0)$ x-axis
 $(-1, 0)$ y-axis
origin

11. $y = x^4 - 5x^2 - 36$

$\{-2.2, 2.6\}$
 $(0, -36)$

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

$(-4, 0)$ $(0, 0)$
 $(0, 2)$

In Problems 13 and 14, find the standard form of the equation of the circle whose center and radius are given.

13. $(h, k) = (3, 4); r = 1$

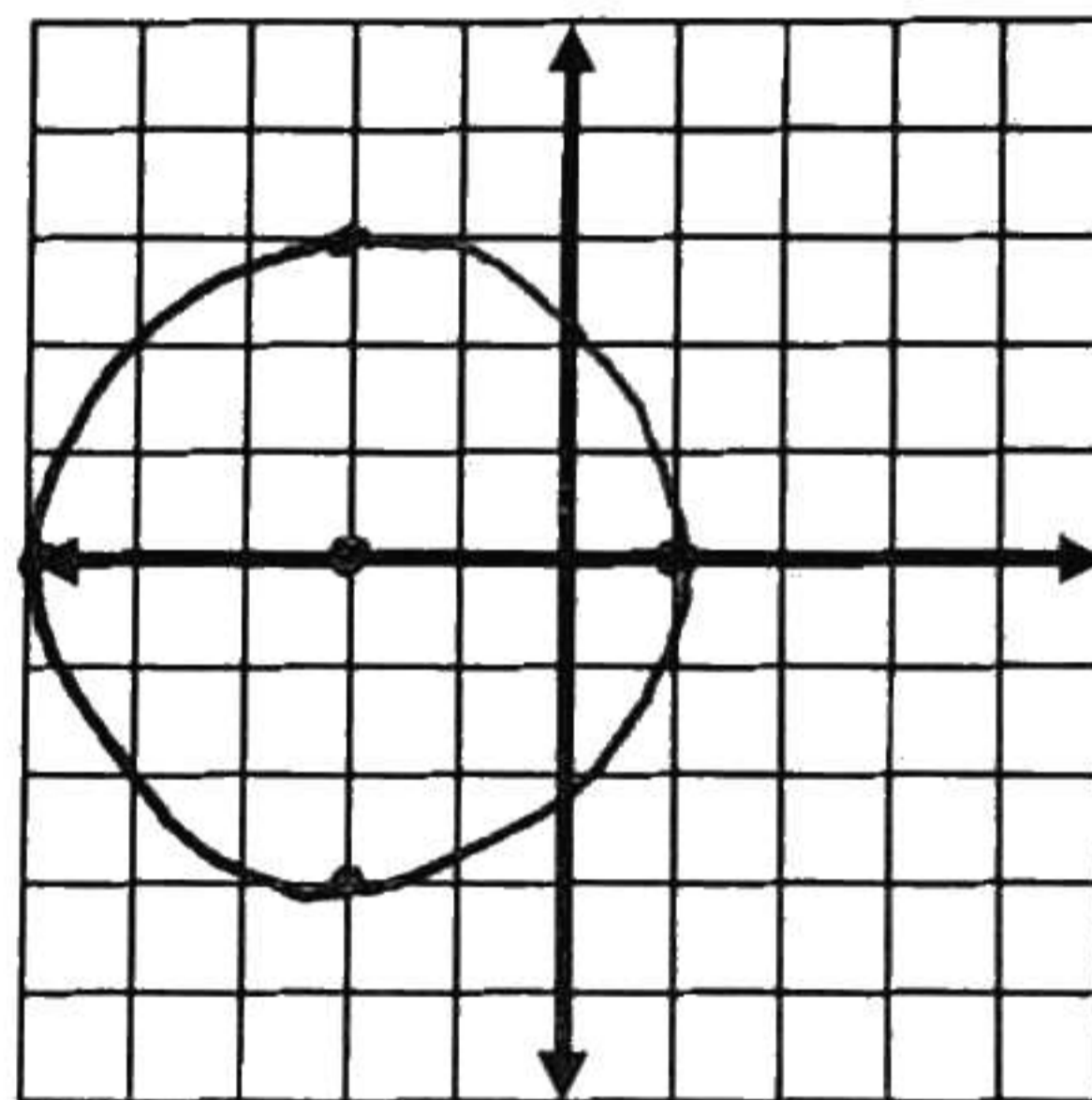
$$(x-3)^2 + (y-4)^2 = 1$$

14. $(h, k) = (2, -4); r = 3$

$$(x-2)^2 + (y+4)^2 = 9$$

In Problem 15-16, find the center and radius of each circle. Graph each circle by hand. Find the intercepts, if any, of each circle.

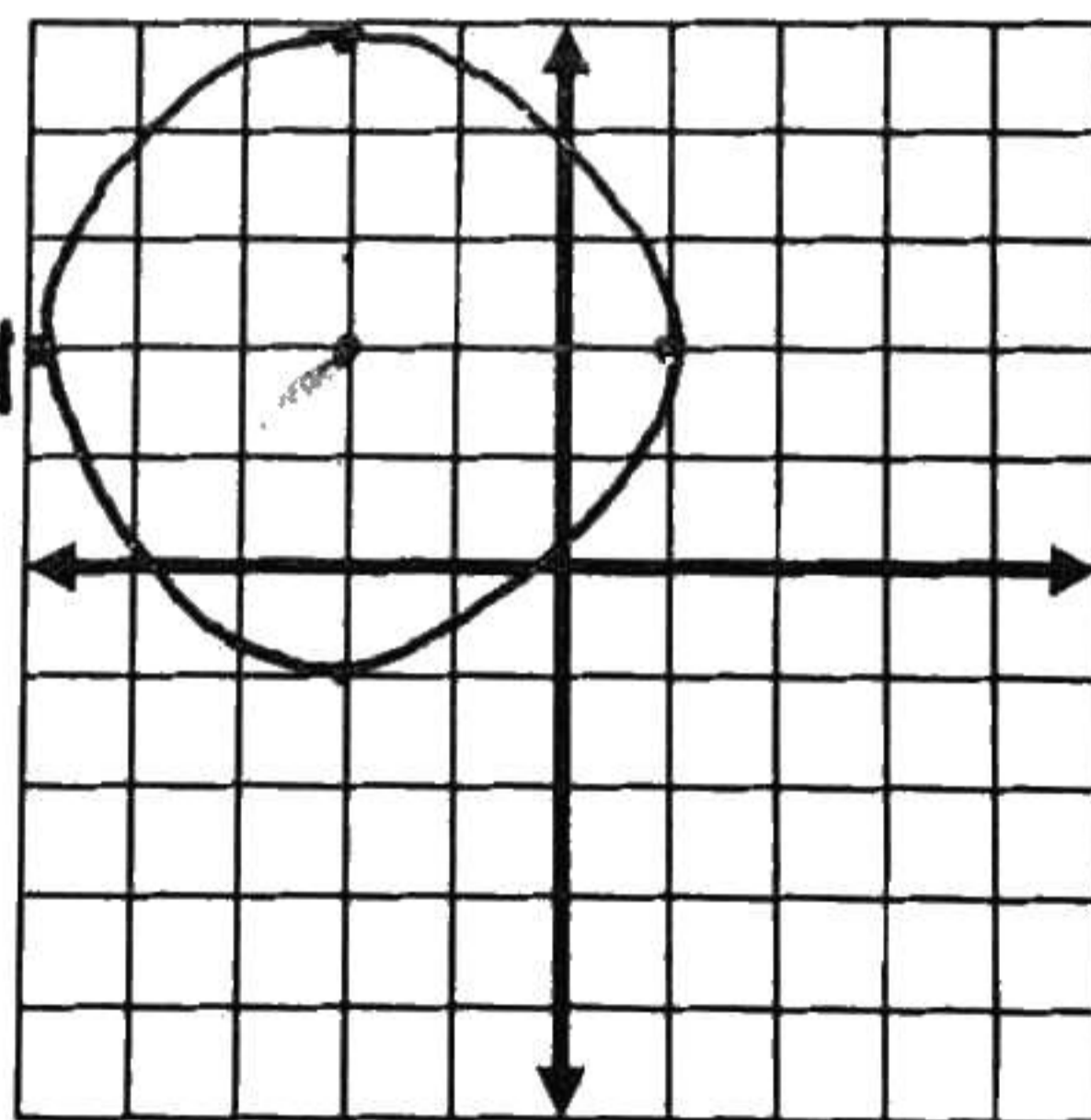
15. $(x+2)^2 + y^2 = 9$



16. $x^2 + y^2 + 4x - 4y - 1 = 0$

$$x^2 + 4x + 4 + y^2 - 4y + 4 = 1 + 4 + 4$$

$$(x+2)^2 + (y-2)^2 = 9$$



In Problems 17 - 19, find an equation of the line having the given characteristics. Express your answer using either the standard form and slope-intercept form of the equation of a line.

17. Slope = -3; containing the point (-4, 2)

$$\begin{aligned}
 y - 2 &= -3(x - (-4)) \\
 y - 2 &= -3x - 12 \\
 y &= -3x - 10 \\
 3x + y &= -10
 \end{aligned}$$

18. Slope = 0; containing the point (2, 1)

$$y = 1$$

19. Perpendicular to the line $x + y = 2$; containing the point (4, -3)

$$y = -x + 2$$

$$\begin{aligned}
 y - (-3) &= 1(x - 4) \\
 y + 3 &= x - 4 \\
 y &= x - 7
 \end{aligned}$$

$$x - y = -1$$

In Problems 20 and 21, find the intercepts and graph each line.

20. $x - 2y = 8$

$$(8, 0) \quad (0, -4)$$

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

$$(3, 0) \quad (0, -4)$$

33. Sketch a graph of $y = \sqrt{x}$. Be sure to label at least three points.

