

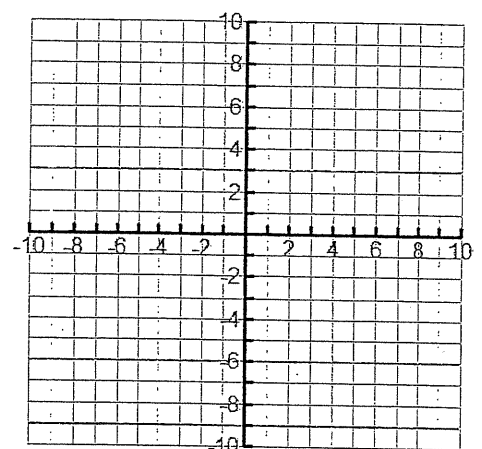
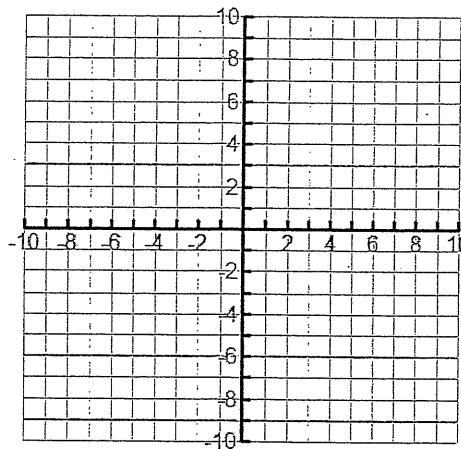
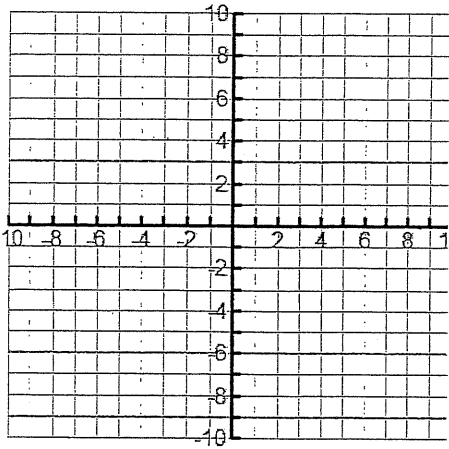
CCGPS Analytic Geometry Unit 6: Day 3 Circles

Given the standard form for the circle, identify the center and radius. Then graph.

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

2. $(x + 1)^2 + (y + 5)^2 = 25$

3. $(x - 4)^2 + (y - 2)^2 = 10$

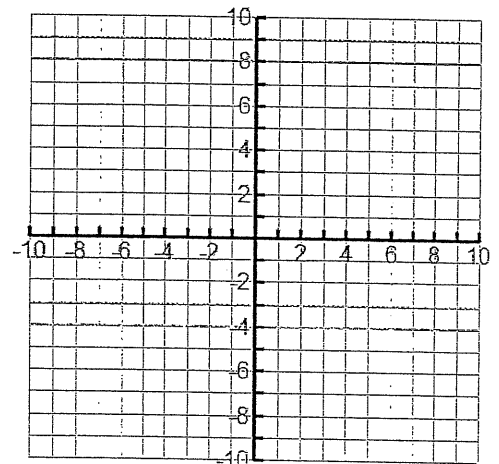
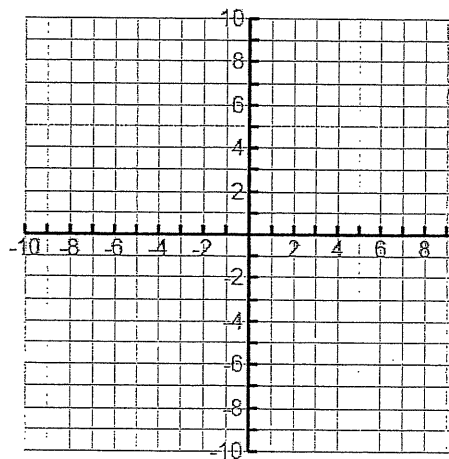
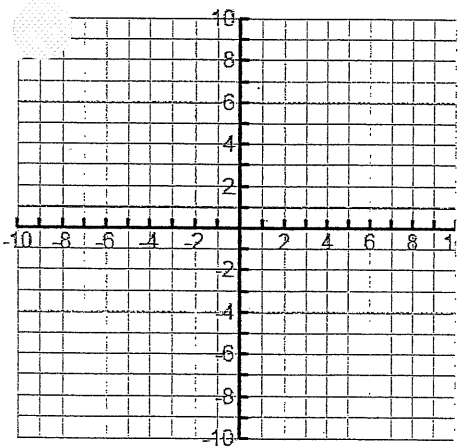


Write the standard form of the equation of each circle described and graph the equation.

4. Center at $(-5, 0)$, radius $\frac{9}{2}$

5. Center at $(3, -2)$ and tangent to the y-axis

6. Center at $(6, 1)$ and tangent to the line $x = 2$.



4. _____

5. _____

6. _____

Write the equations of the circle that satisfies each set of conditions.

7. The circle passes through the origin and has its center at $(-4, 3)$.

8. The circle passes through the point (5, 6) and has its center at (2, 3).

9. The endpoints of a diameter are at (2, 3) and at (-6, -5).

Write the standard form of the equation of each circle and then graph the equation. Identify the center and radius.

10. $x^2 + y^2 - 4x + 12y + 15 = 0$

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

12. $16x^2 + 16y^2 - 64x - 32y = 144$

13. $36 - x^2 = y^2 - 4y$

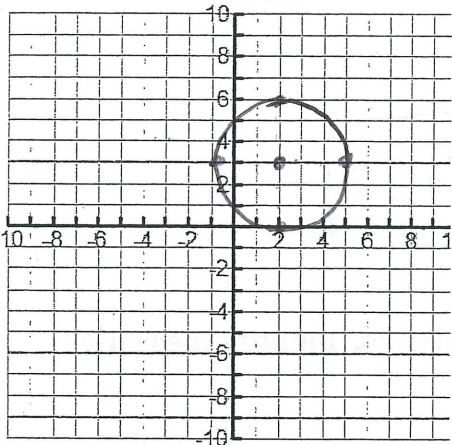
14. Find the radius and the center of a circle defined by the equation $y^2 + x^2 + 6y - 8x - 25 = 0$

CCGPS Analytic Geometry Unit 6: Day 3 Circles

Key
(Day 3)

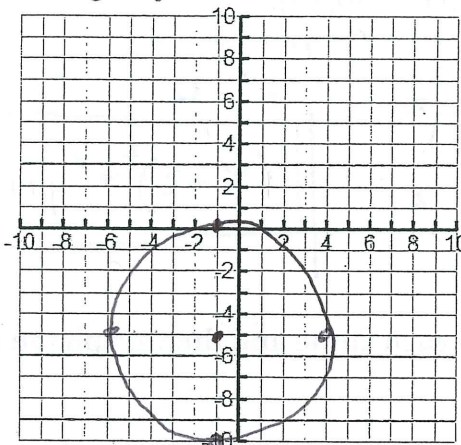
Given the standard form for the circle, identify the center and radius. Then graph.

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

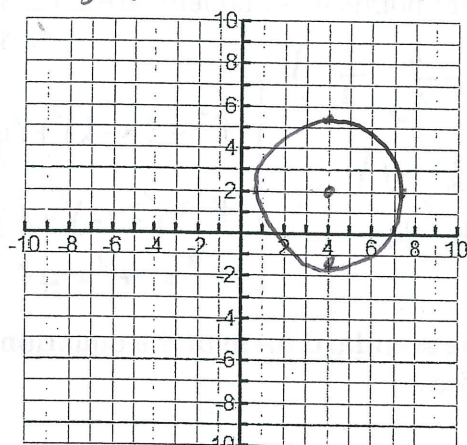


$(2, 3)$ $r = 3$

2. $(x + 1)^2 + (y + 5)^2 = 25$
 $(-1, -5)$ $r = 5$



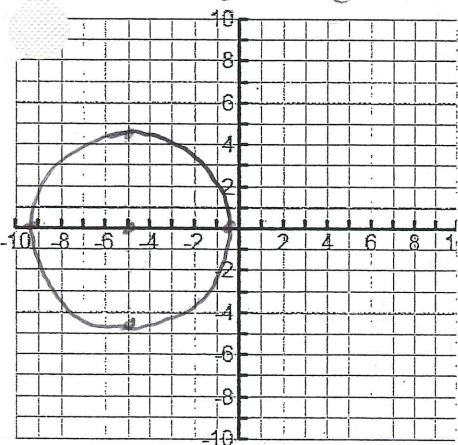
3. $(x - 4)^2 + (y - 2)^2 = 10$
 $(4, 2)$ $r = \sqrt{10} \approx 3.16$



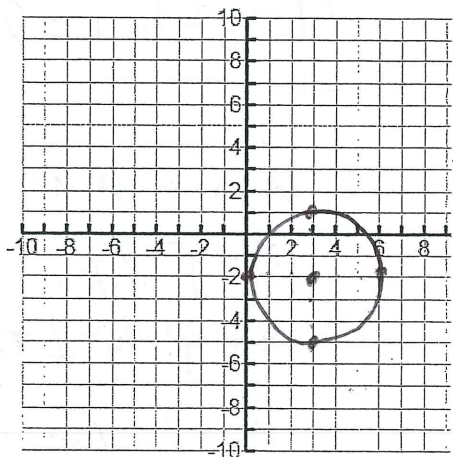
Write the standard form of the equation of each circle described and graph the equation.

4. Center at $(-5, 0)$, radius $\frac{9}{2}$

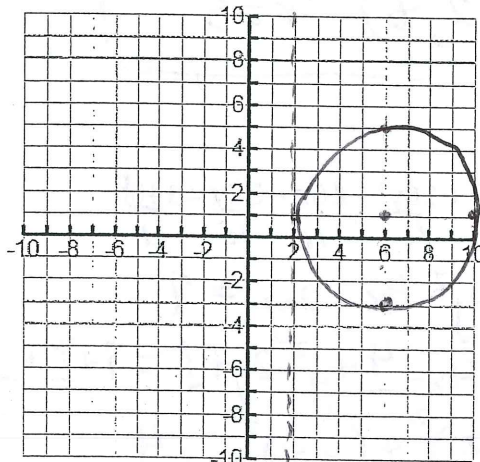
$(x + 5)^2 + (y - 0)^2 = \left(\frac{9}{2}\right)^2$



5. Center at $(3, -2)$ and tangent to the y-axis $r = 3$



6. Center at $(6, 1)$ and tangent to the line $x = 2$ $r = 4$



4. $(x + 5)^2 + (y - 0)^2 = \left(\frac{9}{2}\right)^2$

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

6. $(x - 6)^2 + (y - 1)^2 = 16$

Write the equations of the circle that satisfies each set of conditions.

7. The circle passes through the origin and has its center at $(-4, 3)$.

x, y
 $(0, 0)$

h, k

$(x + 4)^2 + (y - 3)^2 = 25$

$(x - h)^2 + (y - k)^2 = r^2$
 $(0 + 4)^2 + (0 - 3)^2 = r^2$
 $16 + 9 = r^2$
 $25 = r^2$

$r = 5$

8. The circle passes through the point (5, 6) and has its center at (2, 3).

$$(x-h)^2 + (y-k)^2 = r^2$$

$$(5-2)^2 + (6-3)^2 = r^2$$

$$3^2 + 3^2 = r^2$$

$$18 = r^2$$

$$(x-2)^2 + (y-3)^2 = 18$$

9. The endpoints of a diameter are at (2, 3) and at (-6, -5).

$$M\left(\frac{2-6}{2}, \frac{3-5}{2}\right)$$

$$M(-2, -1)$$

h k

$$r^2 = (x-h)^2 + (y-k)^2$$

$$r^2 = (2+2)^2 + (3+1)^2$$

$$r^2 = 4^2 + 4^2$$

$$r^2 = 32$$

$$(x+2)^2 + (y+1)^2 = 32$$

Write the standard form of the equation of each circle and then graph the equation. Identify the center and radius.

10. $x^2 + y^2 - 4x + 12y + 15 = 0$

$$x^2 - 4x + 4 + y^2 + 12y + 36 = -15 + 4 + 36$$

$$(x-2)^2 + (y+6)^2 = 25$$

$$C(2, -6) \quad r=5$$

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

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

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

$$C(-1, 2) \quad r=2$$

12. $16x^2 + 16y^2 - 64x - 32y = 144$

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

$$x^2 - 4x + 4 + y^2 - 2y + 1 = 9 + 4 + 1$$

$$(x-2)^2 + (y-1)^2 = 14$$

$$\text{center } (2, 1) \quad r = \sqrt{14}$$

13. $36 - x^2 = y^2 - 4y$

$$x^2 + y^2 - 4y = 36$$

$$x^2 + y^2 - 4y + 4 = 36 + 4$$

$$(x-0)^2 + (y-2)^2 = 40$$

$$\text{center } (0, 2) \quad r = \sqrt{40} = 2\sqrt{10}$$

14. Find the radius and the center of a circle defined by the equation $y^2 + x^2 + 6y - 8x + 25 = 0$

Ex 6.32

$$x^2 - 8x + 16 + y^2 + 6y + 9 = +25 + 16 + 9$$

$$(x-4)^2 + (y+3)^2 = 50$$

$$r = \sqrt{50} \quad C(4, -3)$$