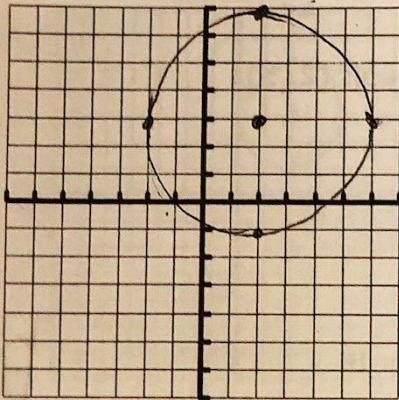


For each circle state the center & radius, and then graph.

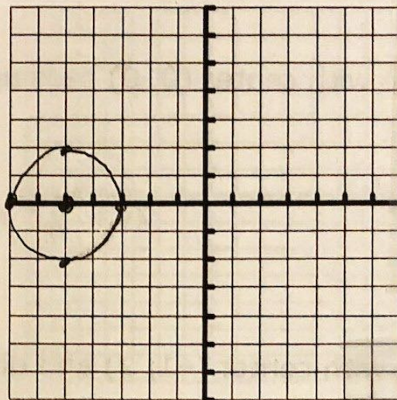
1. $(x-2)^2 + (y-3)^2 = 16$

center: $(2, 3)$ $r = 4$



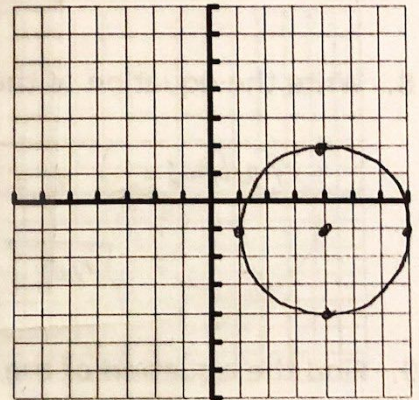
2. $(x+5)^2 + y^2 = 4$

center: $(-5, 0)$ $r = 2$



3. $(x-4)^2 + (y+1)^2 = 9$

center: $(4, -1)$ $r = 3$



Write each equation in standard form. Identify the center and the radius. Then sketch the graph.

4. $x^2 + y^2 + 24x + 6y + 152 = 0$

$$x^2 + 24x + 144 + y^2 + 6y + 9 = -152 + 144 + 9$$

$$(x+12)^2 + (y+3)^2 = 1$$

$$C: (-12, -3)$$

$$r = 1$$

5. $x^2 + y^2 - 4x + 6y - 3 = 0$

$$x^2 - 4x + 4 + y^2 + 6y + 9 = 3 + 4 + 9$$

$$(x-2)^2 + (y+3)^2 = 16$$

$$C: (2, -3) \quad r = 4$$

6. $x^2 + y^2 + 6x + 24y + 89 = 0$

$$x^2 + 6x + 9 + y^2 + 24y + 144 = -89 + 9 + 144$$

$$(x+3)^2 + (y+12)^2 = 64$$

$$C: (-3, -12)$$

$$r = 8$$

Write the standard form equation of each circle.

7. Write the equation of the circle with center (4, -2) and radius 3.

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

8. Write the equation of the circle with center (0, 0) passing through (2, 5):

$$x^2 + y^2 = 29$$

$$d = \sqrt{(2-0)^2 + (5-0)^2}$$

$$d = \sqrt{4+25} = \sqrt{29}$$

$$r = \sqrt{29} \quad r^2 = 29$$

9. Find the equation of the circle with center (-1, 2) and diameter 8.

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

$$\text{radius} = 4 \\ r^2 = 16$$

10. Write the equation of the circle whose diameter has endpoints (-3, -2) and (3, 6).

① Find Midpoint (Center) $\left(\frac{-3+3}{2}, \frac{-2+6}{2}\right) = (0, 2)$

② Find radius $d = \sqrt{(0-(-3))^2 + (2-(-2))^2} = \sqrt{9+16} = \sqrt{25} = 5$

Answer: $x^2 + (y-2)^2 = 25$

Answers:

1) C: (2, 3) r = 4

2) C(-5, 0) r = 2

3) C(4, -1) r = 3

4) C: (-12, -3) r = 1

5) C(2, -3) r = 4

6) C: (-3, -12) r = 8

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

8) $x^2 + y^2 = 29$

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

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