

C.A.T.
Circles Worksheet

B

Name: Key
Date: _____ Per: _____

Write the equation for each circle described.

1. Center (0,0) and radius 8

1. $x^2 + y^2 = 64$

2. Center (0,0) and passing through (-3,4)

2. $x^2 + y^2 = 25$

$$d = \sqrt{(-3-0)^2 + (4-0)^2}$$

$$= \sqrt{9 + 16} = \sqrt{25} = 5$$

3. Center (1,-2) and passing through (-3,2)

3. $(x-1)^2 + (y+2)^2 = 32$

$$d = \sqrt{(1+3)^2 + (-2-2)^2}$$

$$= \sqrt{16 + 16}$$

$$= \sqrt{32}$$

4. Diameter has endpoints at (5,4) and (-1,-2)

4. $(x-2)^2 + (y-1)^2 = 18$

Midpoints: $\left(\frac{5+(-1)}{2}, \frac{4+(-2)}{2}\right) = (2,1) \rightarrow \text{Center}$

$$d = \sqrt{(5-(-1))^2 + (4-(-2))^2}$$

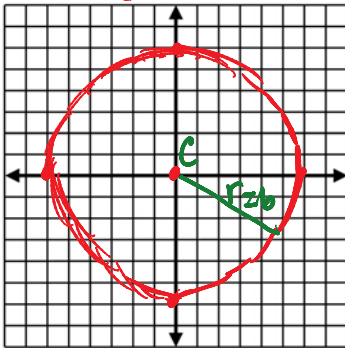
$$= \sqrt{9 + 9}$$

$$= \sqrt{18}$$

Determine the center and radius of each circle and sketch its graph.

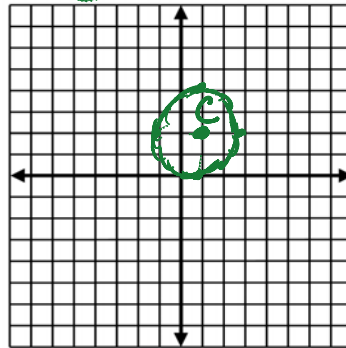
5. $x^2 + y^2 = 36$

C: (0,0) r = 6



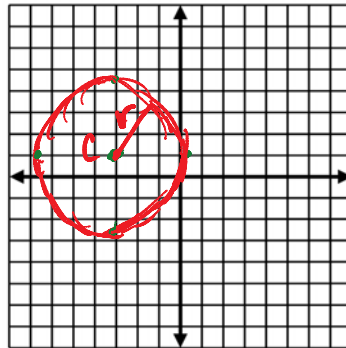
6. $(x-1)^2 + (y-2)^2 = 4$

C: (1,2) r = 2



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

C: (-3,1) r = $\sqrt{12} \approx 3.5$



Determine the center and radius of each circle.

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

$$x^2 + (y^2 - 4y + 4) = 12 + 4$$

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

8. Eqn: $x^2 + (y - 2)^2 = 16$

C: $(0, 2)$ r = 4

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

$$(x^2 + 10x + 25) + (y^2 - 2y + 1) = 0 + 25 + 1$$

$$(x + 5)^2 + (y - 1)^2 = 26$$

9. Eqn: $(x + 5)^2 + (y - 1)^2 = 26$

C: $(-5, 1)$ r = $\sqrt{26} \approx 5.1$

10. $x^2 - 5x + y^2 + y = \frac{1}{2}$

$$(x^2 - 5x + \frac{25}{4}) + (y^2 + y + \frac{1}{4}) = \frac{1}{2} + \frac{25}{4} + \frac{1}{4}$$

$$(x - \frac{5}{2})^2 + (y + \frac{1}{2})^2 = \frac{28}{4} = 7$$

10. Eqn: $(x - \frac{5}{2})^2 + (y + \frac{1}{2})^2 = 7$

C: $(\frac{5}{2}, -\frac{1}{2})$ r = $\sqrt{7} \approx 2.6$

11. $x^2 - \frac{2}{5}x + y^2 + \frac{1}{5}y = \frac{1}{20}$

$$(x^2 - \frac{2}{5}x + \frac{1}{25}) + (y^2 + \frac{1}{5}y + \frac{1}{100}) = \frac{1}{20} + \frac{1}{25} + \frac{1}{100}$$

$$(x - \frac{1}{5})^2 + (y + \frac{1}{10})^2 = \frac{1}{10}$$

11. Eqn: $(x - \frac{1}{5})^2 + (y + \frac{1}{10})^2 = \frac{1}{10}$

C: $(\frac{1}{5}, -\frac{1}{10})$ r = $\sqrt{\frac{1}{10}} \approx .3$