

Day 10 Homework: Equations of Circles

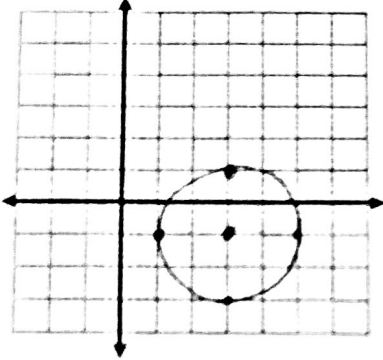
Name: _____

Unit 6 Math 3

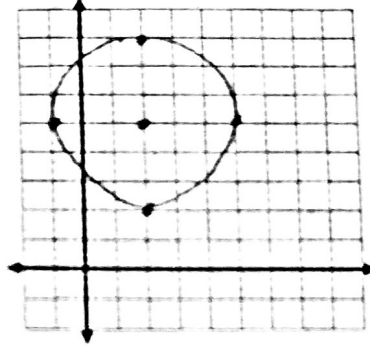
Note: If r^2 is not a perfect square then leave r in simplified radical form but use the decimal equivalent for graphing. Example: $\sqrt{12} = 2\sqrt{3} = 3.46$

1) Graph the following circle:

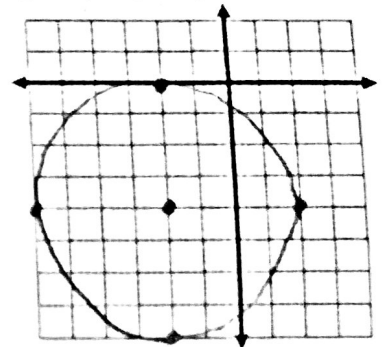
a. $(x - 3)^2 + (y + 1)^2 = 4$



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



c. $(y + 4)^2 + (x + 2)^2 = 16$



2) For each circle, identify its center and radius.

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

Center: $(-3, 1)$

Radius: 2

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

Center: $(0, 3)$

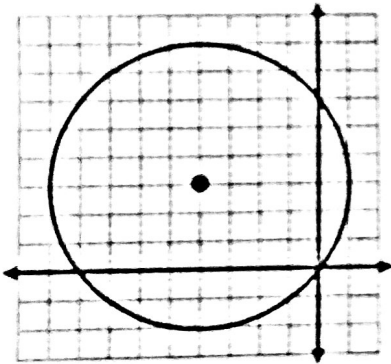
Radius: $\sqrt{18} = 3\sqrt{2}$

c. $(y + 8)^2 + (x + 2)^2 = 72$

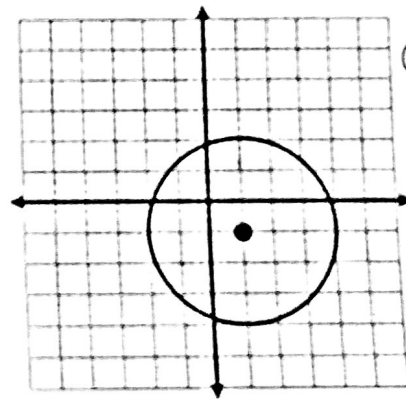
Center: $(-2, -8)$

Radius: $\sqrt{72} = 6\sqrt{2}$

3) Write the equation of the following circles:



$C(-4, 3)$
 $r = 5$
 $(x + 4)^2 + (y - 3)^2 = 25$



$C(1, -1)$ $r = 3$
 $(x - 1)^2 + (y + 1)^2 = 9$

4) Give the equation of the circle that is tangent to the y-axis and center is $(-3, 2)$.

-3 so $r = 3$
 $(x + 3)^2 + (y - 2)^2 = 9$

5) Compare and contrast the following pairs of circles

a. Circle #1: $(x - 3)^2 + (y + 1)^2 = 25$

Circle #2: $(x + 1)^2 + (y - 2)^2 = 25$

same radius

b. Circle #1: $(y + 4)^2 + (x + 7)^2 = 6$

Circle #2: $(x + 7)^2 + (y + 4)^2 = 36$

same center

6) Find the standard form, center, and radius of the following circles:

a. $x^2 + y^2 - 4x + 8y - 5 = 0$

$$x^2 - 4x + y^2 + 8y = 5$$

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

Center: $(2, -4)$ Radius: 5

b. $4x^2 + 4y^2 + 36y + 5 = 0$

$$\frac{4x^2 + 4y^2 + 36y}{4} = \frac{-5}{4}$$

$$x^2 + y^2 + 9y = -\frac{5}{4} + 20.25$$

$$x^2 + y^2 + 9y + 20.25 = 19$$

$$x^2 + (y+4.5)^2 = 19$$

Center: $(0, -4.5)$ Radius: $\sqrt{19}$

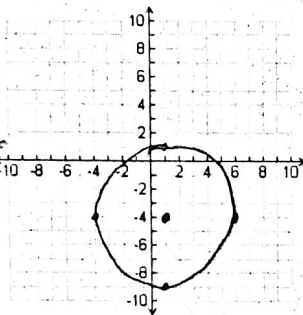
7) Graph the following circles.

a. $x^2 - 2x + y^2 + 8y - 8 = 0$

$$(x^2 - 2x + 1) + (y^2 + 8y + 16) = 8 + 1$$

$$(x-1)^2 + (y+4)^2 = 25$$

$C(1, -4)$ $r=5$

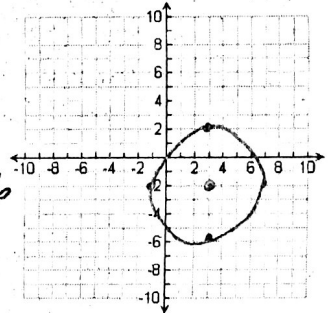


b. $x^2 + y^2 - 6x + 4y - 3 = 0$

$$\begin{matrix} 3 \\ +9 \\ +4 \end{matrix}$$

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

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



8) Give the equation of the circle whose center is $(5, -3)$ and goes through $(2, 5)$

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

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

$$73 = r^2$$

$$(x-5)^2 + (y+3)^2 = 73$$

9) Give the equation whose endpoints of a diameter at $(-4, 1)$ and $(4, -5)$

$$C(0, -2)$$

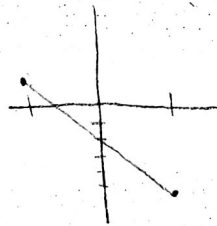
$$(x-0)^2 + (y+2)^2 = r^2$$

$$(-4)^2 + (1+2)^2 = r^2$$

$$16 + 9 = r^2$$

$$25 = r^2$$

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



10) Give the equation of the circle whose center is $(4, -3)$ and goes through $(1, 5)$

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

$$(1-4)^2 + (5+3)^2 = r^2$$

$$9 + 64 = r^2$$

$$73 = r^2$$

$$(x-4)^2 + (y+3)^2 = 73$$

11) Give the equation whose endpoints of a diameter at $(-3, 2)$ and $(1, -5)$

$$(-1, -1.5)$$

$$(x+1)^2 + (y+1.5)^2 = r^2$$

$$(-3+1)^2 + (2+1.5)^2 = r^2$$

$$16.25 = r^2$$

$$(x+1)^2 + (y+1.5)^2 = 16.25$$