

Unit 13 Lesson 1: Equations of Circles HW

Geo CC

1. Determine the center and radius of the given circles.

a) $(x-7)^2 + (y+10)^2 = 81$

Center $(7, -10)$

Radius = 9

b) $100 = (x+3)^2 + y^2$

Center $(-3, 0)$

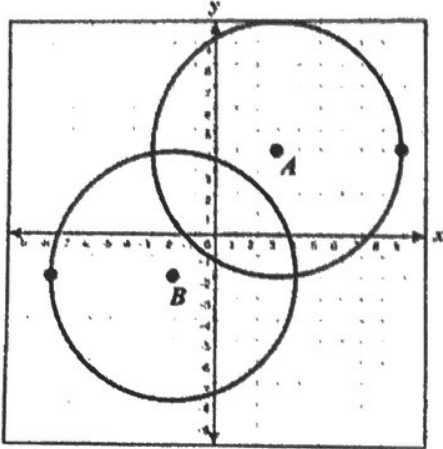
Radius = 10

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

Center $(9, -2)$

Radius = 1

2. Determine the equation of the circle.



Equation of Circle A:

$(x-3)^2 + (y-4)^2 = 36$

Equation of Circle B:

$(x+2)^2 + (y+2)^2 = 36$

3. What is the equation of a circle whose center is 4 units above the origin in the coordinate plane and whose radius is 6?

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

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

3) $x^2 + (y-4)^2 = 36$

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

$(0, 4)$

4. The center of a circular sunflower with a diameter of 4 centimeters is $(-2, 1)$. Which equation represents the sunflower?

$r = 2$

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

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

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

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

5. A circle whose center has coordinates $(-3, 4)$ passes through the origin. What is the equation of the circle?

~~1) $(x+3)^2 + (y-4)^2 = 5$~~

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

~~3) $(x-3)^2 + (y+4)^2 = 5$~~

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

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

$= \sqrt{9+16}$

$= \sqrt{25} = 5 = r$

6. Write an equation of a circle whose diameter has endpoints $(-2, -1)$ and $(2, 3)$.

midpt: $(\frac{-2+2}{2}, \frac{-1+3}{2})$
 $(0, 1)$

$d = \sqrt{(-2-2)^2 + (-1-3)^2}$
 $= \sqrt{16+16} = \sqrt{32}$

$r = (\frac{\sqrt{32}}{2})^2 = \frac{32}{4} = 8$

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

Determine the center and radius of the given circles by completing the square.

$$x^2 + 10x + y^2 - 16 = 0$$

$$x^2 + 10x + \underline{25} + y^2 = 16 + \underline{25}$$

$$(x+5)^2 + y^2 = 41$$

$$\text{center: } (-5, 0)$$

$$\text{radius: } \sqrt{41}$$

$$\text{b) } x^2 + y^2 + 18x + 17 = 0$$

$$x^2 + 18x + \underline{81} + y^2 = -17 + \underline{81}$$

$$(x+9)^2 + y^2 = 64$$

$$\text{center: } (-9, 0)$$

$$\text{radius: } 8$$

$$\text{c) } x^2 + 2x - 18 = -y^2 + 8x$$

$$x^2 + 2x - 8x + y^2 = 18$$

$$x^2 - 6x + \underline{9} + y^2 = 18 + \underline{9}$$

$$(x-3)^2 + y^2 = 27$$

$$\text{center: } (3, 0)$$

$$\text{radius: } \sqrt{27} = 3\sqrt{3}$$