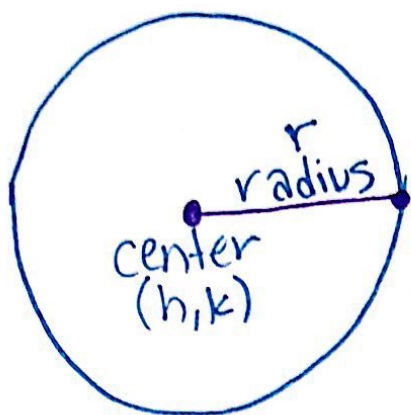


6.3: Equation of a Circle



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

↑
x-coordinate of center

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

↑
y-coordinate of center

radius
↓
2

Determine center & radius

Ex 1) $(x-3)^2 + (y+4)^2 = 81$

center: $(3, -4)$

radius: $\sqrt{r^2} = \sqrt{81}$

$r = 9$

Ex 2) $(x+7)^2 + (y-2)^2 = 1$

center: $(-7, 2)$

radius: $\sqrt{r^2} = \sqrt{1}$

$r = 1$

Ex 3) $(x-5)^2 + y^2 = 20$

center: $(5, 0)$

radius: $\sqrt{r^2} = \sqrt{20}$

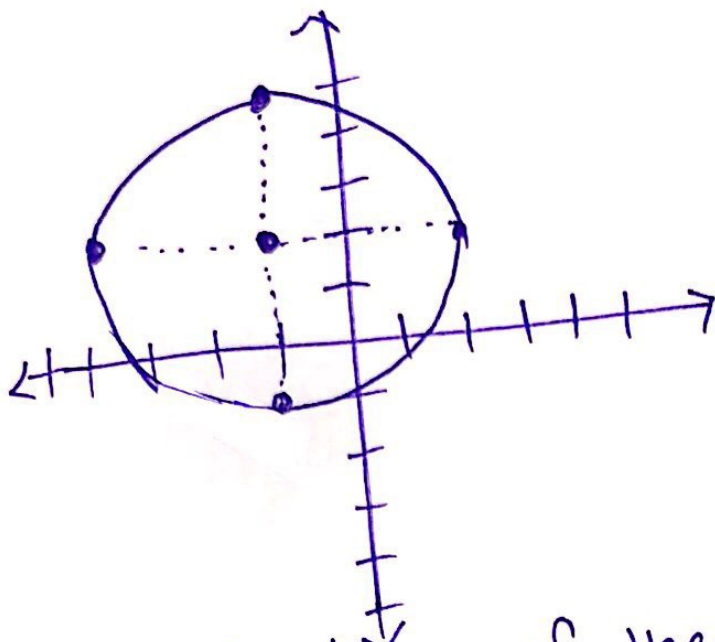
$$\begin{array}{r} 20 \\ 5 \overset{4}{\wedge} \\ \hline 2 \quad 2 \\ \hline \sqrt{2 \cdot 2 \cdot 5} \end{array}$$

$r = 2\sqrt{5}$

Ex 4) Graph: $(x+1)^2 + (y-2)^2 = 9$

center: $(-1, 2)$

radius: $\sqrt{r^2} = \sqrt{9}$
 $r = 3$



Write the equation of the circle:

Ex 5)

center: $(-8, 3)$ radius: 2

$$(x+8)^2 + (y-3)^2 = 2^2$$

↑
4

Ex 6)

center: $(0, -1)$ radius: 11

$$(x+0)^2 + (y+1)^2 = 11^2$$

$$x^2 + (y+1)^2 = 121$$

Ex 7)

center: $(3, 5)$

passes thru: $(9, -3)$

distance formula:

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

$$r = \sqrt{(3-9)^2 + (5-(-3))^2}$$

$$r = \sqrt{100}$$

$$r = 10$$

$$(x-3)^2 + (y-5)^2 = 100$$