

Standard Form of a Circle:

The center is at (h, k) and where r is ^{radius} the square root of r^2 in the equation.

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

*change signs of h & k
when identifying the center!

EX 1: Write an equation of a circle with center $(3, -2)$ and a radius of 4.

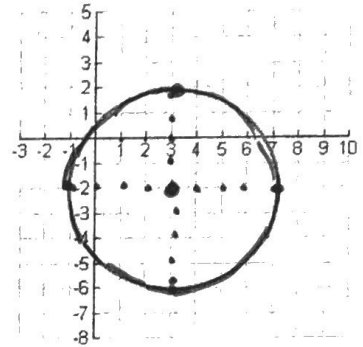
$$C: (3, -2)$$

h k

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

$$r: 4$$

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



EX 2: Write an equation of a circle with center $(-4, 0)$ and a diameter of 10.

$$C: (-4, 0)$$

h k

$$(x+4)^2 + (y+0)^2 = 25$$

$$r: 10/2 = 5$$

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

EX 3: Write an equation of a circle with center $(2, -9)$ and a radius of $\sqrt{2}$.

$$C: (2, -9)$$

h k

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

$$r: \sqrt{2}$$

$$\sqrt{2}^2 = 2$$

EX 4: Find the coordinates of the center and the measure of the radius for $(x-6)^2 + (y+3)^2 = 25$.

$$C: (6, -3)$$

*change signs of h & k !

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

$$\sqrt{r^2} = \sqrt{25}$$

$$r = 5$$

EX 5: Find the coordinates of the center and the measure of the radius for $(x+1)^2 + (y-2)^2 = 40$.

$$C: (-1, 2)$$

$$\sqrt{r^2} = \sqrt{40}$$

$$r: 2\sqrt{10}$$

$$\begin{array}{c} \wedge \\ 10 \quad 4 \\ \wedge \quad \wedge \\ \underline{52} \quad \underline{22} \end{array}$$

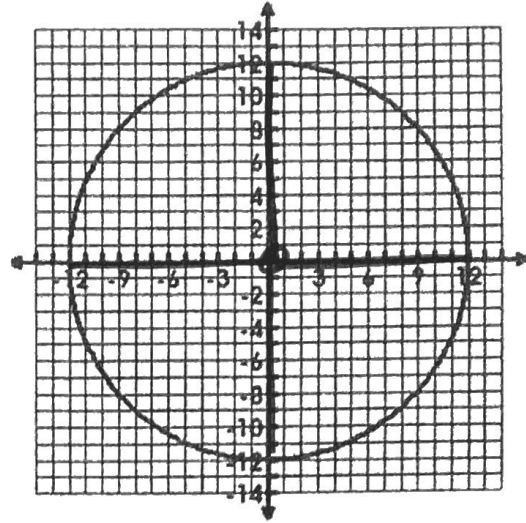
EX 6: Find the center, radius, & equation of the circle.

$$C: (0, 0)$$

$$r: 12$$

$$(x+0)^2 + (y+0)^2 = 144$$

$$\boxed{x^2 + y^2 = 144}$$

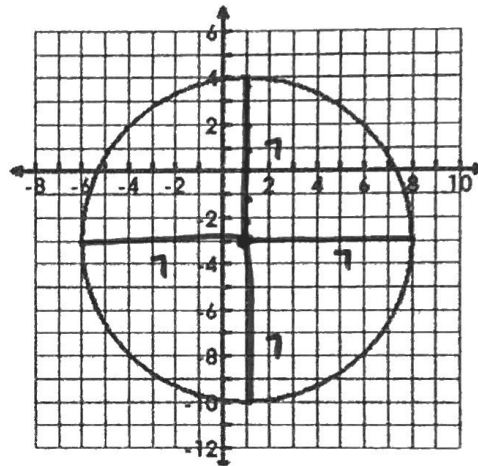


EX 7: Find the center, radius, & equation of the circle.

$$C: (1, -3)$$

$$r: 7$$

$$\boxed{(x-1)^2 + (y+3)^2 = 49}$$



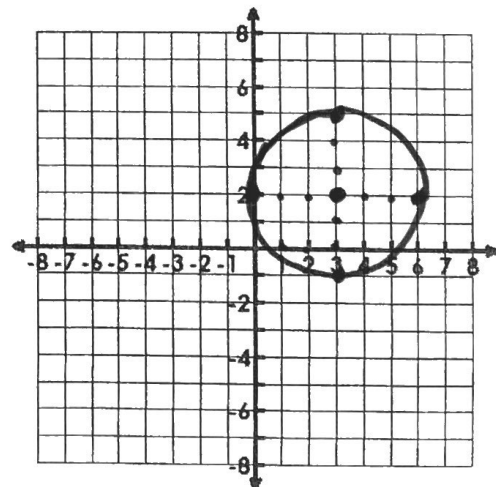
EX 8: Graph the circle of $(x-3)^2 + (y-2)^2 = 9$

$$C: (3, 2)$$

$$\sqrt{r^2} = \sqrt{9}$$

$$r = 3$$

$$r: 3$$



- 1st plot center
- 2nd count radius in all 4 directions
- 3rd connect the 4 points