

WELCOME

Chapter 16 Section 5a:
Graphing Circles

## WARM-UP

1) Graph: $f(x)=|x-3|+2$
2) Factor the following.

$$
9 x^{2}-64
$$

3) Find the inverse of the given function.

$$
f(x)=-3 x+2
$$

## Chap 16 Sect 5a: Learning Targets

- Find the center and radius of a circle given the equation of a circle.
- Graph a circle.
-Write the equation for a circle given a graph.


## Circles

-Definition: the set of all points that are equidistant from a given point (the center). The distance between the center and any point is called the radius.

## Circles

## Equation of a Circle:

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

-The center is at ( $\mathrm{h}, \mathrm{k}$ )

-The radius is $\underline{r}$ (notice that in the equation $r$ is squared)

Try some...

1) $(x-2)^{2}+(y+4)^{2}=16$
center $=\quad$ radius $=$
2) $(x-3)^{2}+y^{2}=9$
center $=\quad$ radius
3) $x^{2}+(y+5)^{2}=4$ center $=\quad$ radius $=$

## How do we draw a circle on graphing paper when we know the center and radius for a given equation? <br> Step 1: Plot the center.

Step 2: Make 4 points, one up, down, left and right from the center. The distance between the points and the center is the radius.

Step 3: Connect the points in a circular fashion. DO NOT create a square. This will take practice.

$$
\begin{aligned}
& (x-1)^{2}+(y+3)^{2}=9 \\
& \text { Center }=(,) \text { Radius }=
\end{aligned}
$$



## Try graphing these:

$$
\text { 1) }(x-2)^{2}+(y+4)^{2}=16
$$

2) $(x-3)^{2}+y^{2}=9$
3) $x^{2}+(y+5)^{2}=4$

## Write the Equation of a Circle

Circle A

The center is $(16,10)$

The radius is 10

The equation is:
$(x-16)^{2}+(y-10)^{2}=100$
论

## Try this one...

Circle B

The center is:

The radius is:

The equation is:

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## Try one more...

## Circle O:

The center is

The radius is

The equation is
(2)

