Precalculus
Conic Section Worksheet \# 1 - Homework Circles

Name $\qquad$

Directions: Give the center and radius of each circle. Then, graph the circle. Be sure to clearly mark the center of the circle and four points on the circumference of the circle.

1. $x^{2}+y^{2}=1$
center $(0,0)$


$$
r=1
$$

3. $(x-2)^{2}+(y-4)^{2}=16$
center


$$
\begin{aligned}
& (2,4) \\
& r=4
\end{aligned}
$$

2. $x^{2}+y^{2}=9$
center
$(0,0)$

3. $x^{2}+(y+3)^{2}=10 \quad$ center


$$
\begin{aligned}
& (0,-3) \\
& r=\sqrt{10} \\
& \approx 3.1
\end{aligned}
$$

5. Write the equation of a circle whose center is located at ( $-3,4$ ) and has a radius of 8 .

$$
(x+3)^{2}+(y-4)^{2}=64
$$

6. Write the equation of a circle whose diameter has endpoints located at $(-2,-5)$ and $(6,3)$.

$$
\begin{array}{rlr} 
& & \text { center }
\end{array}=\text { midst }=\left(\frac{-2+6}{2}, \frac{-5+3}{2}\right)=(2,-1)
$$

7. Put each equation into standard form, and give the coordinates of the center and give the radius.
a) $x^{2}+y^{2}+8 x-6 y=0$
b) $x^{2}+y^{2}+4 x-8=0$

$$
\begin{aligned}
& x^{2}+8 x+16+y^{2}-6 y+9=0+16+9 \\
& (x+4)^{2}+(y-3)^{2}=25 \\
& \begin{array}{l}
\text { center }(-4,3) \\
r=5
\end{array}
\end{aligned}
$$

$$
x^{2}+4 x+4+y^{2}=8+4
$$

$(x+2)^{2}+y^{2}=12$
center $(-2,0)$

$$
r=\sqrt{12}=2 \sqrt{3}
$$

c) $x^{2}+y^{2}-4 x+8 y-5=0$

$$
\begin{aligned}
& x^{2}-4 x+4+y^{2}+8 y+16=5+4+16 \\
& (x-2)^{2}+(y+4)^{2}=25 \\
& \text { center }(2,-4) \\
& r=5
\end{aligned}
$$

d) $\frac{3 x^{2}+3 y^{2}+12 x-6 y+9=0}{3}$

$$
x^{2}+y^{2}+4 x-2 y+3=0
$$

$$
x^{2}+4 x+4+y^{2}-2 y+1=-3+4+1
$$

$$
(x+2)^{2}+(y-1)^{2}=2
$$

center $(-2,1)$

$$
r=\sqrt{2}
$$

