Unit 6: Geometric and Algebraic Conn. Equations of Circles 1: Standard Form Notes
Name: _____ Date: _____ Period: _____

STANDARD FORM

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

$\underline{r} = \underline{\text{radius}}$

$(\underline{h}, \underline{k}) = \underline{\text{center}}$ of the circle

Identify the center and the radius

EX1: $(x-2)^2 + (y-4)^2 = 81$ (h, k, r^2)

Center: (2, 4)

Radius: 9

$\sqrt{r^2} = \sqrt{81}$ $r = 9$

EX2: $(x+7)^2 + (y-3)^2 = 9$ (h, k, r^2)

Center: (-7, 3)

Radius: 3

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

EX3: $(x+8)^2 + (y+6)^2 = 51$ (h, k, r^2)

Center: (-8, -6)

Radius: $\sqrt{51}$

Ex 4: $x^2 + (y-3)^2 = 27$

Center: (0, 3) $(x-0)^2$ x^2

Radius: $3\sqrt{3}$

$\sqrt{r^2} = \sqrt{27}$ $r = 3\sqrt{3}$

$27 = 3 \cdot 9$, $9 = 3 \cdot 3$

Use the information to write the equation of each circle

EX1: Center: (-12, -5)

Radius: $\sqrt{8}$

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

$(x--12)^2 + (y--5)^2 = (\sqrt{8})^2$

$(x+12)^2 + (y+5)^2 = 8$

EX2: Center (-15, 10)

Radius: 3

$(x--15)^2 + (y-10)^2 = 3^2$

$(x+15)^2 + (y-10)^2 = 9$

EX3: Center: (8, 13)

Radius: 7

$(x-8)^2 + (y-13)^2 = 7^2$

$(x-8)^2 + (y-13)^2 = 49$

EX4: Center (-10, -12)

Radius: $3\sqrt{2}$

$(x--10)^2 + (y--12)^2 = (3\sqrt{2})^2$

$(x+10)^2 + (y+12)^2 = 18$

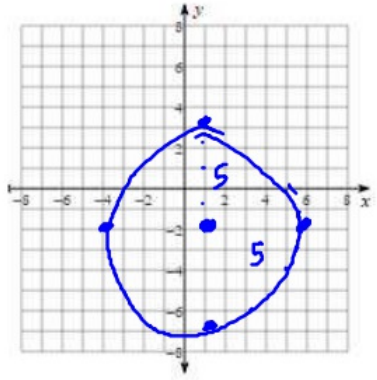
$3^2 \sqrt{2}^2$

$9 \cdot 2 = 18$

Identify the center and the radius. Then graph the circle.

EX1: h k r^2

$(x-1)^2+(y+2)^2=25$



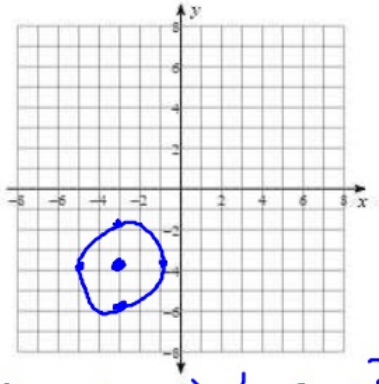
Center: $(1,-2)$

radius: $r^2=25$

$r=5$

EX2: h k r^2

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



Center: $(-3,-4)$

radius: $\sqrt{r^2}=\sqrt{4}$

$r=2$