Spiral Review:

Complete the square.

1.) $x = y^2 - 14y + 25$

$-25 \quad -25$

$x - 25 + 49 = y^2 - 14y + 49$

$x + 24 = (y-7)^2$

2.) $x^2 + y^2 + 8x - 6y = 0$

$x^2 + 8x + 16 + y^2 - 6y + 9 = 0 + 16 + 9$

$(x+4)^2 + (y-3)^2 = 25$

3.) $x^2 + 4y^2 + 4x - 24y + 24 = 0$

$x^2 + 4x + 4 + 4y^2 - 24y = -24$

$x^2 + 4x + 4 + 4(y^2 - 6y + 9) = -24 + 4 + 36$

$\frac{(x+2)^2}{16} + \frac{4(y-3)^2}{16} = \frac{16}{16}$

$\frac{(x+2)^2}{16} + \frac{(y-3)^2}{4} = 1$

4.) $4x^2 - 9y^2 - 32x - 18y + 19 = 0$

$4x^2 - 32x \quad -9y^2 - 18y = -19$

$4(x^2 - 8x + 16) - 9(y^2 + 2y + 1) = -19 + 64 - 9$

$\frac{4(x-4)^2}{36} - \frac{9(y+1)^2}{36} = \frac{36}{36}$

$\frac{(x-4)^2}{9} - \frac{(y+1)^2}{4} = 1$

p.636 9.1 Circles

Formula:

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

Center: (h,k)

radius: r

Don't forget- radius is half the diameter!

Students will be able to find the standard form of the equation of the circle.

Example 1: Find the standard form of the equation of the circle with the given characteristics.

a.) center: origin $(0,0)$ (h k)
radius: $\sqrt{11}$

$(x-0)^2+(y-0)^2=(\sqrt{11})^2$

$\boxed{x^2+y^2=11}$

b.) center: $(6,-3)$ (h k)
point on circle: $(-2,4)$

$d=\sqrt{(6+2)^2+(-3-4)^2}$

$=\sqrt{(8)^2+(-7)^2}$

$=\sqrt{64+49}$

$d(r)=\sqrt{113}$

$(x-6)^2+(y-3)^2=(\sqrt{113})^2$

$\boxed{(x-6)^2+(y+3)^2=113}$

Students will be able to identify the center and radius of the circle.

Example 2: Identify the center and radius of the circle.

a.) $x^2 + y^2 = 121$

center $= (0,0)$

radius $= \sqrt{121}$
$= 11$

b.) $x^2 + (y + 8)^2 = 25$

center $= (0,-8)$

radius $= \sqrt{25}$
$= 5$

Students will be able to write the equation of the circle in standard form, identify the radius and center, and sketch.

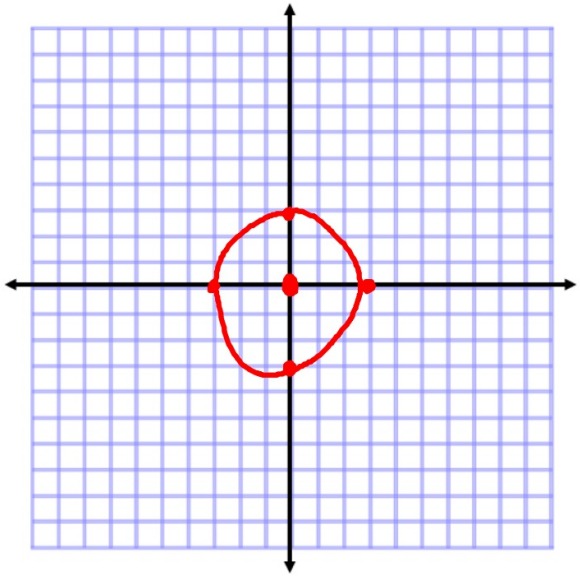
Example 3: Write the equation of the circle in standard form, identify the radius and center, and sketch.

a.) $9\left(\frac{1}{9}x^2 + \frac{1}{9}y^2\right) = (1)\cdot 9$

$x^2 + y^2 = 9$

center: $(0,0)$

radius $= \sqrt{9} = 3$



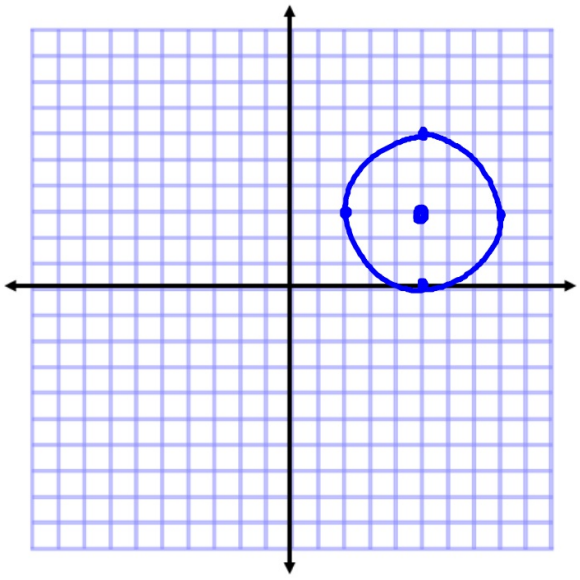
b.) $x^2 + y^2 - 10x - 6y + 25 = 0$

$(x^2 - 10x + 25) + (y^2 - 6y + 9) = -25 + 25 + 9$

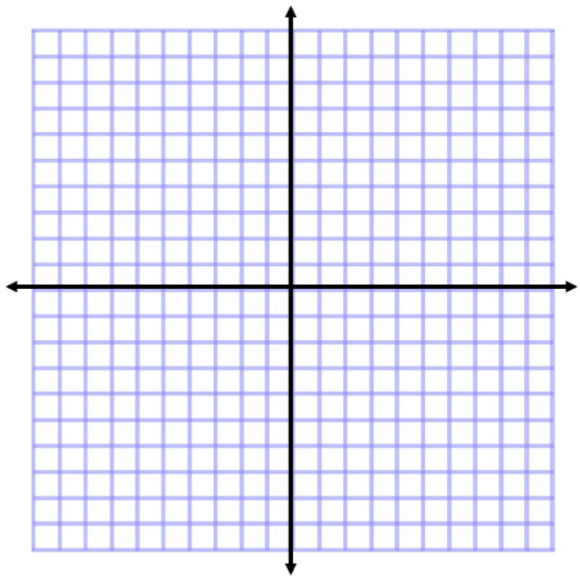
$(x-5)^2 + (y-3)^2 = 9$

center: $(5,3)$

radius: 3



c.) $y^2 = 81 - x^2$



d.) $x^2 + y^2 + 10y + 9 = 0$

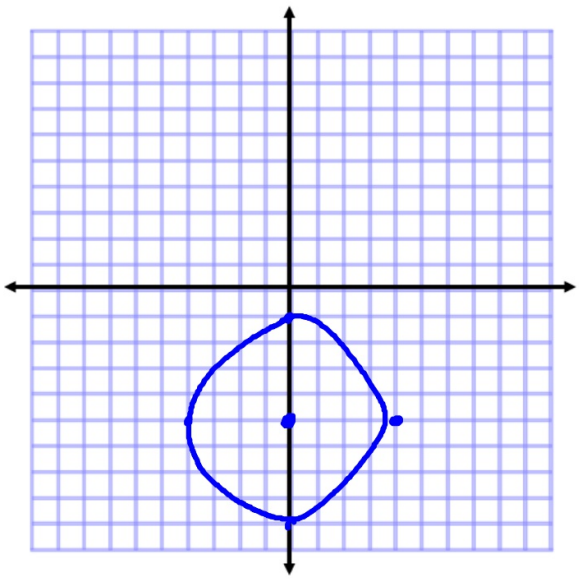
$x^2 + y^2 + 10y = -9$

$x^2 + y^2 + 10y + 25 = -9 + 25$

$x^2 + (y+5)^2 = 16$

Center: $(0, -5)$

Radius: $\sqrt{16} = 4$



Turn-in:
p.643 (18, 22, 30, 32)

HW:
p.643 (7-33 odds, 41, 42)