11.3 Practice - Circles

Use the information provided to write the standard form equation of each circle.

1) Center: $(1, -14)$
   Radius: 2

$$(x-1)^2 + (y+14)^2 = 4$$

2) Center: $(14, 10)$
   Radius: 2

$$(x-14)^2 + (y-10)^2 = 4$$

3) Center: $(-9, -2)$
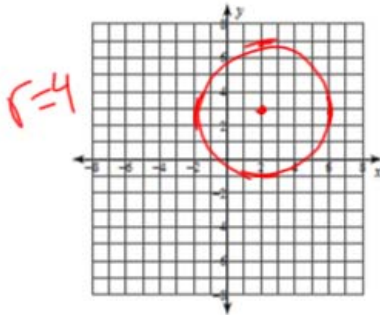   Radius: 5

$$(x+9)^2 + (y+2)^2 = 25$$
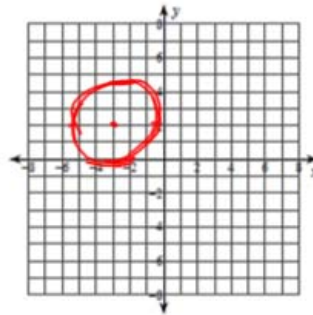
4) Center: $(9, 7)$
   Radius: 6

$$(x-9)^2 + (y-7)^2 = 36$$

Identify the center and radius of each. Then sketch the graph.
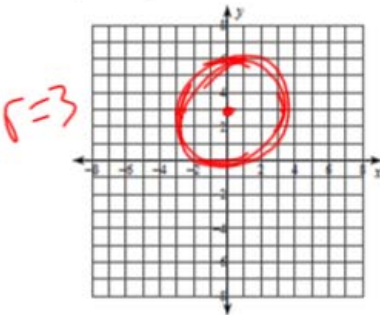
5) $(x-2)^2 + (y-3)^2 = 16$

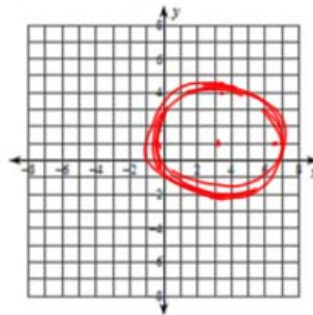$r = 4$

6) $(x+3)^2 + (y-2)^2 = 6$

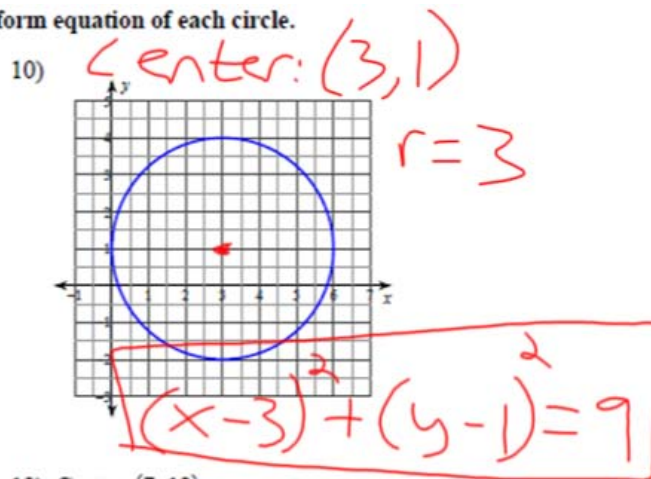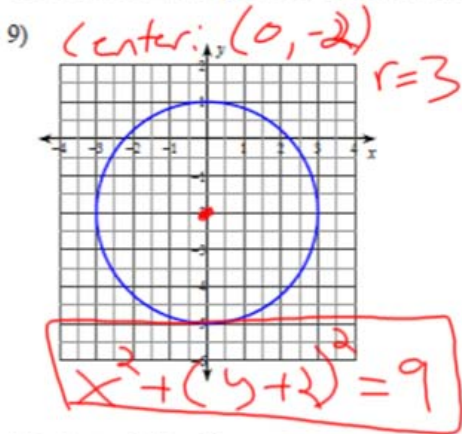$r = \sqrt{6} \approx 2.4$

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

$r = 3$

8) $(x-3)^2 + (y-1)^2 = 11$

$r = \sqrt{11} \approx 3.3$

Use the information provided to write the standard form equation of each circle.

9) Center: $(0, -2)$ $r=3$

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

10) Center: $(3, 1)$ $r=3$

$$(x-3)^2 + (y-1)^2 = 9$$

11) Center: $(-13, -9)$
Point on Circle: $(-13, -12)$

$$(-13+13)^2 + (-12+9)^2 = r^2$$
$$9 = r^2$$
$$(x+13)^2 + (y+9)^2 = 9$$

12) Center: $(7, 12)$
Point on Circle: $(10, 15)$

$$(10-7)^2 + (15-12)^2 = r^2$$
$$9 + 9 = r^2$$
$$(x-7)^2 + (y-12)^2 = 18$$

13) Center: $(12, 0)$
Point on Circle: $(5, 0)$

$$(5-12)^2 + (0-0)^2 = r^2$$
$$49 = r^2$$
$$(x-12)^2 + y^2 = 49$$

14) Center: $(17, -16)$
Point on Circle: $(16, -17)$

$$(16-17)^2 + (-17+16)^2 = r^2$$
$$1 + 1 = r^2$$
$$(x-17)^2 + (y+16)^2 = 2$$

The point below is a point on a circle whose center is at the origin. Write an equation of the line tangent to the circle at the given point.

15) $(-3, 9)$ $m = \frac{9}{-3} = -3$

$$y - 9 = \frac{1}{3}(x+3)$$
$$y - 9 = \frac{1}{3}x + 1$$
$$y = \frac{1}{3}x + 10$$

16) $(-1, -5)$ $m = \frac{-5}{-1} = 5$

$$y + 5 = -\frac{1}{5}(x+1)$$
$$y + 5 = -\frac{1}{5}x - \frac{1}{5}$$
$$-\frac{35}{5} \qquad -\frac{25}{5}$$
$$y = -\frac{1}{5}x - \frac{26}{5}$$

Classify the conic section as a circle or a parabola.

17) $y = (x+2)^2 + 2$

Parabola

18) $(x-1)^2 + \left(y - \frac{7}{2}\right)^2 = 1$

Circle

19) $(x+2)^2 + (y+4)^2 = 1$

Circle

20) $x = -2(y+6)^2 - 7$

Parabola