Do Now: #s 1 and 2

Name:_____   Date:_____
PC: Circle Practice   Ms. Loughran

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

1) $8x + x^2 - 2y = 64 - y^2$

$x^2 + 8x + 16 + y^2 - 2y + 1 = 64 + 16 + 1$

$(x+4)^2 + (y-1)^2 = 81$

Center: $(-4, 1)$
$r = 9$

2) $137 + 6y = -y^2 - x^2 - 24x$

$x^2 + 24x + 144 + y^2 + 6y + 9 = -137 + 144 + 9$
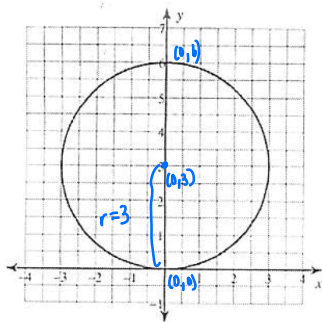
$(x + 12)^2 + (y+3)^2 = 16$

Center: $(-12, -3)$
$r = 4$

Continuing on the Circle Practice sheet…

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

Center: (h, k)
$r = $ radius

11)

(0,6)
(0,3)
r=3
(0,0)

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

15) Center: $(-15, 3\sqrt{7})$
   Area: 2π

need radius

$A = \pi r^2$
$2\pi = \pi r^2$
$2 = r^2$

$(x+15)^2 + (y - 3\sqrt{7})^2 = 2$

17) Center: $(-5, 12)$
   Circumference: 8π

$C = 2\pi r$
$8\pi = 2\pi r$
$8 = 2r$
$4 = r$

$(x+5)^2 + (y-12)^2 = 16$

Practice

Problems 1-3: Find the center and radius of each circle below.

1. $(x - 3)^2 + (y - 2)^2 = 16$

    $C: (3, 2) \quad r = 4$

2. $(x - 1)^2 + (y + 3)^2 = 4$
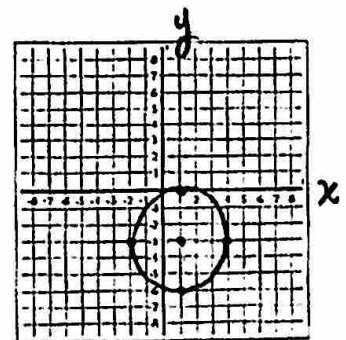
    $C(1, -3) \quad r = 2$

3. $(x + 2)^2 + (y - 5)^2 = 1$

    $C(-2, 5) \quad r = 1$

Problems 4-5: Graph the following.

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

    $C(1, -3)$

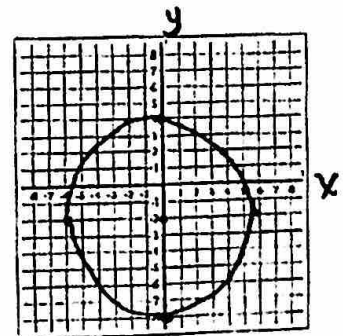 $r = 3$

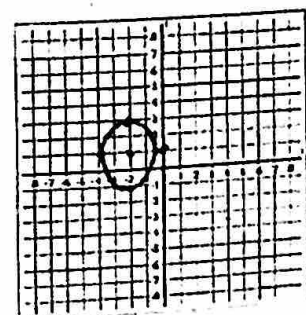5. $x^2 + (y + 2)^2 = 36$

    $C(0, -2)$

    $r = 6$
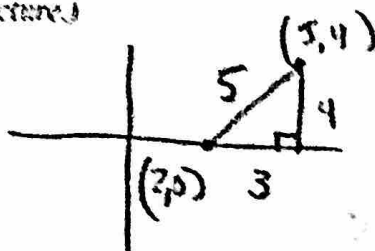

6. $(x + 2)^2 + (y - 1)^2 = 4$

    $C(-2, 1)$

    $r = 2$

7. Write the equation of a circle in standard form that has a radius of 5 and a center at $(3, -2)$.

$$(X-3)^2 + (y+2)^2 = 25$$

8. Write the equation of a circle in standard form that has a radius of 2 and a center at $(-1, -4)$.

$$(X+1)^2 + (y+4)^2 = 4$$

9. Write the equation of a circle in standard form that passes through the point $(5, 4)$ and has a center at $(2, 0)$. (Draw a picture.)

$$(X-2)^2 + y^2 = 25$$
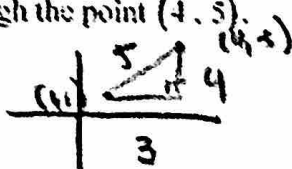
$r = 5$
or
$d = \sqrt{(5-2)^2 + (4-0)^2}$
$d = \sqrt{3^2 + 4^2}$
$d = \sqrt{9+16} = \sqrt{25} = 5$

10. Write the equation of a circle whose center is at $(1, 1)$ that passes through the point $(4, 5)$.

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

$r = 5$ or $d = \sqrt{(4-1)^2 + (5-1)^2}$
$c(1,1)$ $d = \sqrt{3^2 + 4^2}$
$d = \sqrt{9+16}$
$d = \sqrt{25} = 5$

11. Find the radius of a circle with equation:

$x^2 - 6x + y^2 + 10y = 2$

$$r = 6$$

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

$$(x-3)^2 + (y+5)^2 = 36$$

12. Write the equation of the circle in standard form:

$x^2 - 10x + y^2 - 8y = -32$

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

$$x^2 - 10x + 25 + y^2 - 8y + 16 = -32 + 25 + 16$$

$$(X-5)^2 + (y-4)^2 = 9$$

13. Write the equation of the circle in standard form:

$x^2 + 4x + y^2 + 6y = 0$

$(X+2)^2 + (y+3)^2 = 13$

$x^2 + 4x + 4 + y^2 + 6y + 9 = 4 + 9$

$(x+2)^2 + (y+3)^2 = 13$

14. Write the equation of the circle in standard form:

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

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

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

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