Geometry Notes

Name Key

10.7 Write and Graph Equations of Circles

Standard Equation of a Circle:

$(x-h)^2+(y-k)^2=r^2$ Center: (h, k) Radius: r

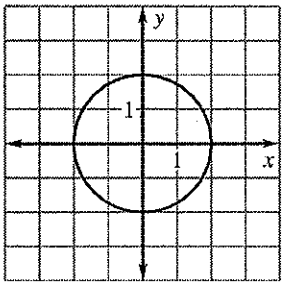
Write the equation of the circle shown.

1. Center (0,0)

$r = 2$

$(x-0)^2+(y-0)^2=2^2$

$x^2+y^2=4$

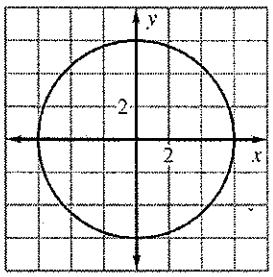


2. Center (0,0)

$r = 6$

$(x-0)^2+(y-0)^2=6^2$

$x^2+y^2=36$



Write the standard equation of a circle with the given center and radius:

3. Center: (0, -5) Radius: $\frac{3}{2}$

$(x-0)^2+(y+5)^2=(3/2)^2$

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

4. Center: (-3, -5) Radius: 12

$(x+3)^2+(y+5)^2=12^2$

$(x+3)^2+(y+5)^2=144$

5. Center: (-4, 7) Radius: 9

$(x+4)^2+(y-7)^2=9^2$

$(x+4)^2+(y-7)^2=81$

6. Center: (-3, 4) Radius: 5

$(x+3)^2+(y-4)^2=5^2$

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

Write the standard equation of a circle with the given center and a point ON the circle:

7. The point (1, -3) is on the circle with center (-1, -1). Write the standard equation of the circle.

$r=\sqrt{(-1-1)^2+(-1+3)^2}$

$r=\sqrt{4+4}$

$r=\sqrt{8}$

$(x+1)^2+(y+1)^2=\sqrt{8}^2$

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

8. The point (-3, 1) is on the circle with center (2, 3). Write the standard equation of the circle

$r=\sqrt{(2+3)^2+(3-1)^2}$

$r=\sqrt{25+4}$

$r=\sqrt{29}$

$(x-2)^2+(y-3)^2=\sqrt{29}^2$

$(x-2)^2+(y-3)^2=29$

9. The point (0, 6) is on the circle with center (-2, -1). Write the standard equation of the circle.

$r=\sqrt{(-2-0)^2+(-1-6)^2}$

$r=\sqrt{4+49}$

$r=\sqrt{53}$

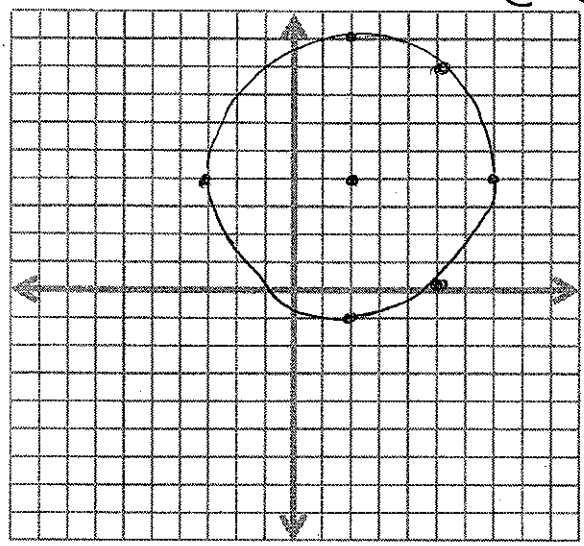
$(x+2)^2+(y+1)^2=\sqrt{53}^2$

$(x+2)^2+(y+1)^2=53$

Graphing the Circle with the given equation.

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

$r=5$
$C=(2,4)$



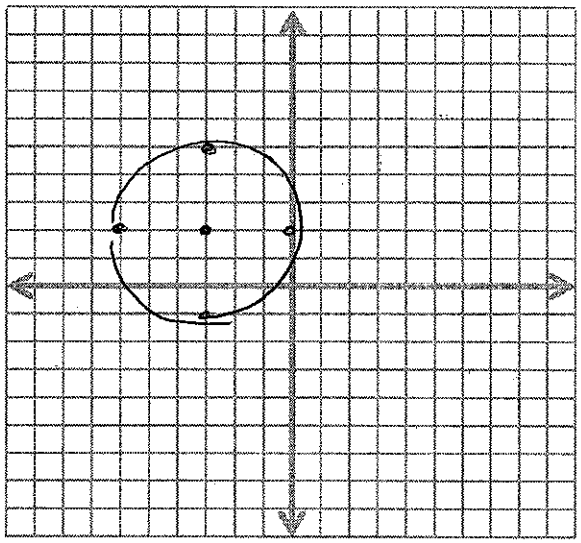
If (5,y) is on this circle find the coordinates of y.

$(5-2)^2+(y-4)^2=25$
$(3)^2+(y-4)^2=25$
$9+(y-4)^2=25$
$(y-4)^2=16$

$y-4=\pm 4$
$y=4\pm 4$
$y=8 \quad y=0$

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

$r=3$
$C\ (-3,2)$



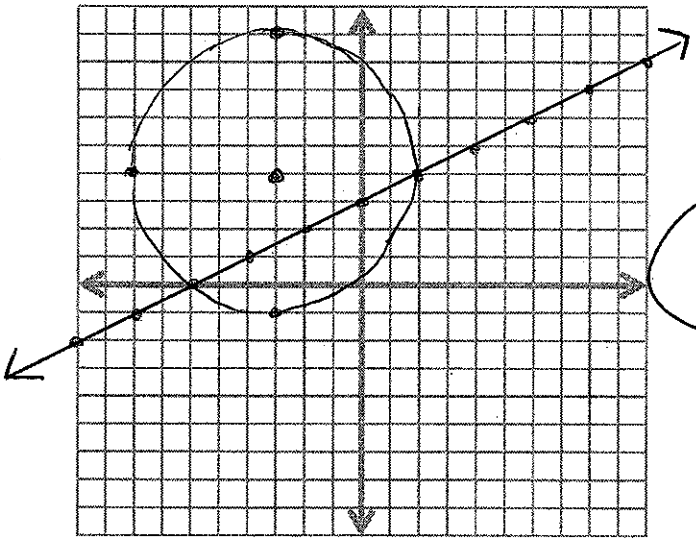
If (x,4) is on this circle find the coordinates of y.

$(x+3)^2+(y-2)^2=9$
$(x+3)^2+(4-2)^2=9$
$(x+3)^2+(2)^2=9$
$(x+3)^2=5$

$x+3=\pm\sqrt{5}$
$x=-3\pm\sqrt{5}$
$-3+\sqrt{5}\approx -.764$
$-3-\sqrt{5}\approx -5.23$

12. Graph a circle with a center at (-3, 4) and radius length of 5. Next graph the line $x-2y=-6$. What is the best description of the line in relation to the circle?

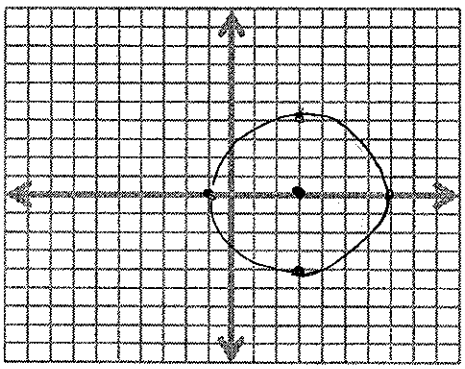
$-2y=-x-6$
$y=\frac{x}{2}+3$
$\boxed{m=\frac{1}{2}\quad b=3}$



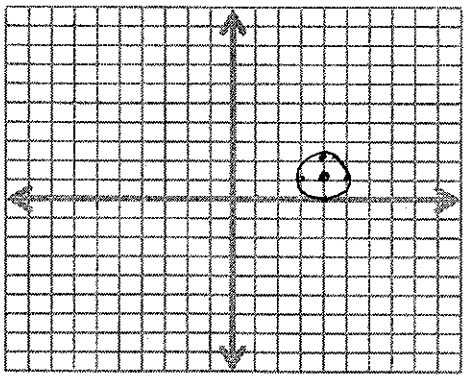
The line is a secant to the ⊙

Use these 3 coordinate planes for your homework on Page 702.

21. Center (3,0) $r=4$



23. Center (4,1) $r=1$



25. Center (-2,-6) $r=5$