

10-3 Circles

$$\sqrt{72} = \boxed{6\sqrt{2}}$$

$$\begin{array}{r} 1.72 \\ 2 \overline{)36} \\ \underline{8} \end{array}$$

⑥ $x^2 - 2x + \boxed{1}$

$(\frac{1}{2} \cdot 2) \rightarrow (-1)^2$

Standard Form of Circles

Center: Origin (0,0) $x^2 + y^2 = r^2$

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

yesterday...

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

$$-x^2 \quad -x^2$$

$$\sqrt{y^2} = \sqrt{9-x^2}$$

$$y = \pm \sqrt{9-x^2}$$

①

$$x^2 + y^2 = r^2$$

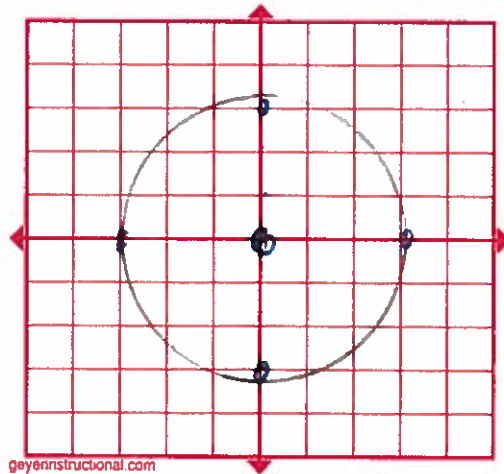
$$x^2 + y^2 = 9$$

center (0,0) $\sqrt{r^2} = \sqrt{9}$

$r = 3$

D: [-3, 3]

R: [-3, 3]



2

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

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

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

radius $r=2$

center: $(3, -1)$

$$x-3=0$$

$$+3 +3$$

$$x=3$$

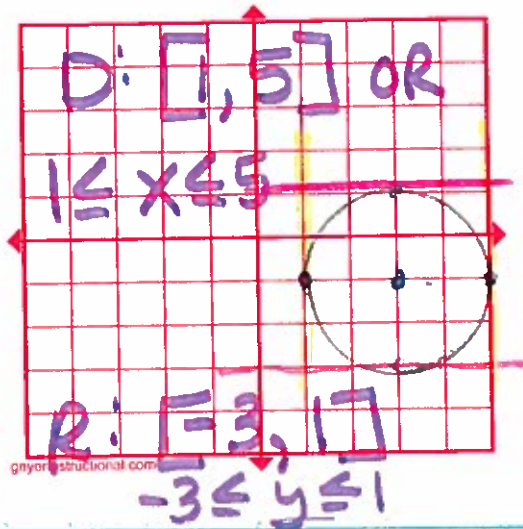
H

$$y+1=0$$

$$-1 -1$$

$$y=-1$$

K



3

Write the eq. of the circle with center $(-7, 2)$ and diameter 9.

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

$$\frac{9}{2} = 4.5$$

radius

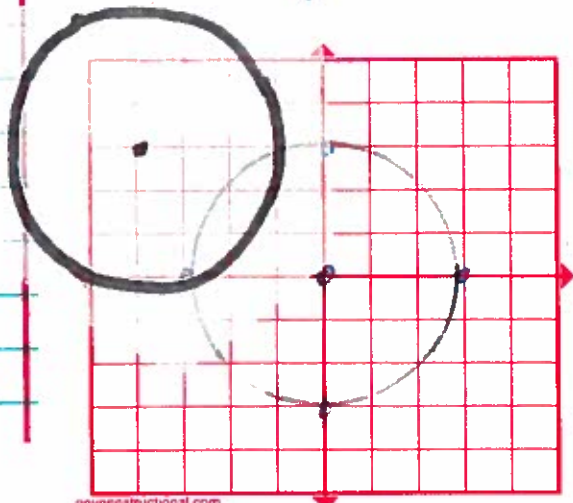
$$(x-(-7))^2$$

$$(x+7)^2 + (y-2)^2 = 20.25$$

$$4.5^2$$

4

Write the equation of the translation of $x^2 + y^2 = 9$ four units left and 3 up.



center $(-4, 3)$

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

Area Circle: $A = \pi r^2$

Circumference: $C = \pi d$ or $2\pi r$

Use the given info to write the eq. of the circle.

⑤ Area is 36π , center (h, k)

$$\frac{\pi r^2}{\pi} = \frac{36\pi}{\pi}$$

$$r^2 = 36$$

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

⑥ circumference 7π , center $(-4, 5, 9)$

$$\frac{2\pi r}{2\pi} = \frac{7\pi}{2\pi}$$

$$r = 3.5$$

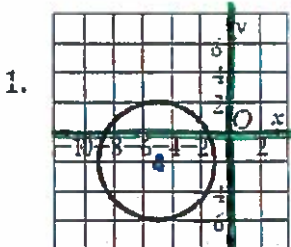
square

$$(x+4.5)^2 + (y-9)^2 = 12.25$$

Alg. 2 Practice 10-3 (1)

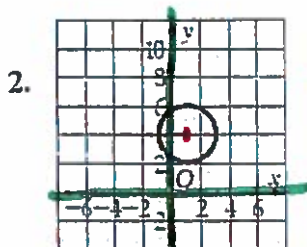
Circles

Write an equation in standard form for each circle.

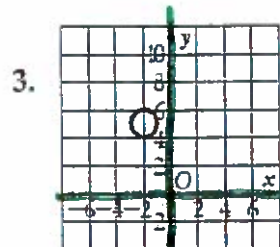


$R = 4$ $(-5, -2)$

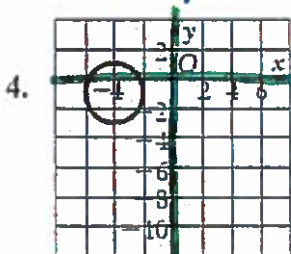
$(x+5)^2 + (y+2)^2 = 16$



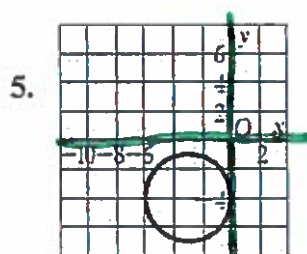
$R = 2$ $(1, 4)$



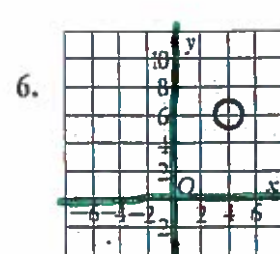
$R = \underline{\hspace{1cm}}$ $(\underline{\hspace{1cm}}, \underline{\hspace{1cm}})$



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Write an equation of a circle with the given center and radius. Check your answers.

7. center (0, 0), radius 3 $\rightarrow 3^2$
 $x^2 + y^2 = 9$

8. center (0, 1), radius 2

9. center (-1, 0), radius 6
 $(x+1)^2 + y^2 = 36$

10. center (2, 0), radius 1

11. center (0, -3), radius 5

12. center (4, -4), radius 1.5

13. center (-2, 6), radius 4

14. center (5, -1), radius 1.1

15. center (1, -5), radius 2.5 $\rightarrow 2.5^2$
 $(x-1)^2 + (y+5)^2 = 6.25$

16. center (2, 3), diameter 1

Center: (4, -2)
Write an equation for each translation.

17. $x^2 + y^2 = 9$; right 4 and down 2

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

19. $x^2 + y^2 = 49$; right 1 and up 7

21. $x^2 + y^2 = 25$; up 10

18. $x^2 + y^2 = 12$; left 2 and up 5

20. $x^2 + y^2 = 1$; right 5 and up 5

22. $x^2 + y^2 = 36$; left 8 and down 6

Find the center and radius of each circle.

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

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

25. $(x+3)^2 + (y+1)^2 = 2$ $\leftarrow \sqrt{r^2} = \sqrt{2}$
C: (-3, -1) $r = \sqrt{2}$

26. $(x-6)^2 + y^2 = 5$

27. $(x-6)^2 + (y-9)^2 = 4$

28. $x^2 + y^2 = 144$

Use the center and radius to graph each circle.

State D & R.

29. $(x+9)^2 + (y-2)^2 = 81$

30. $x^2 + (y+3)^2 = 121$

31. $(x-8)^2 + (y+9)^2 = 64$

32. $(x+8)^2 + y^2 = 49$

33. $(x-6)^2 + (y-3)^2 = 75$

34. $(x+9)^2 + (y+9)^2 = 36$

~~35.~~ $(x+7)^2 + (y+2)^2 = 80$

~~36.~~ $(x-5)^2 + (y+7)^2 = 25$

TB p. 565 (45-48)

