

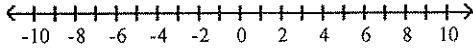
Name \_\_\_\_\_

**MULTIPLE CHOICE.** Choose the one alternative that best completes the statement or answers the question.

**Solve the inequality. Express your answer using interval notation.**

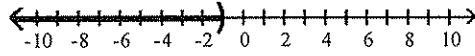
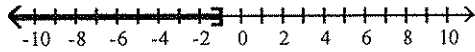
1)  $8 - 2(3 - x) \leq 0$

1) \_\_\_\_\_



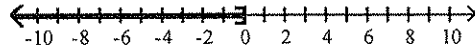
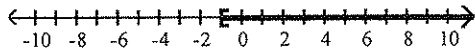
A)  $(-\infty, -1]$

B)  $(-\infty, -1)$



C)  $[-1, \infty)$

D)  $(-\infty, 0]$



**List the intercepts for the graph of the equation.**

2)  $x^2 + y - 49 = 0$

2) \_\_\_\_\_

A)  $(7, 0), (0, 49), (0, -49)$

B)  $(0, -7), (49, 0), (0, 7)$

C)  $(-7, 0), (0, 49), (7, 0)$

D)  $(-7, 0), (0, -49), (7, 0)$

**Solve the problem.**

3) If the voltage,  $V$ , in an electric circuit is held constant, the current,  $I$ , is inversely proportional to the resistance,  $R$ . If the current is 280 milliamperes (mA) when the resistance is 5 ohms, find the current when the resistance is 20 ohms.

3) \_\_\_\_\_

A) 1116 mA

B) 70 mA

C) 350 mA

D) 1120 mA

**Find the distance  $d(P_1, P_2)$  between the points  $P_1$  and  $P_2$ .**

4)  $P_1 = (1, -3); P_2 = (-4, -15)$

4) \_\_\_\_\_

A) 169

B) 14

C) 13

D) 26

**Solve the problem.**

5) If  $(a, 3)$  is a point on the graph of  $y = 2x - 5$ , what is  $a$ ?

5) \_\_\_\_\_

A) 4

B) -4

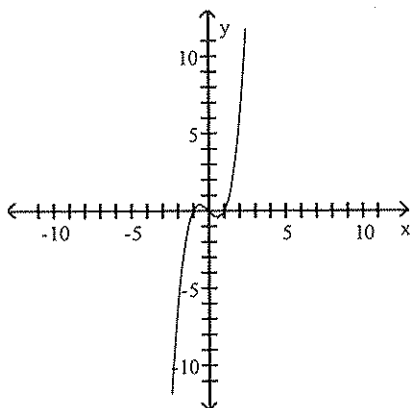
C) -1

D) 1

List the intercepts of the graph. Tell whether the graph is symmetric with respect to the x-axis, y-axis, origin, or none of these.

6)

6) \_\_\_\_\_



- A) intercepts:  $(-1, 0)$ ,  $(0, 0)$ ,  $(1, 0)$   
symmetric with respect to x-axis
- B) intercepts:  $(-1, 0)$ ,  $(0, 0)$ ,  $(1, 0)$   
symmetric with respect to x-axis, y-axis, and origin
- C) intercepts:  $(-1, 0)$ ,  $(0, 0)$ ,  $(1, 0)$   
symmetric with respect to origin
- D) intercepts:  $(-1, 0)$ ,  $(0, 0)$ ,  $(1, 0)$   
symmetric with respect to y-axis

Find the slope-intercept form of the equation of the line with the given properties.

7) Horizontal; containing the point  $\left(-\frac{6}{7}, 3\right)$

7) \_\_\_\_\_

- A)  $y = 0$
- B)  $y = -\frac{6}{7}$
- C)  $y = -3$
- D)  $y = 3$

8) Horizontal; containing the point  $(-8, 5)$

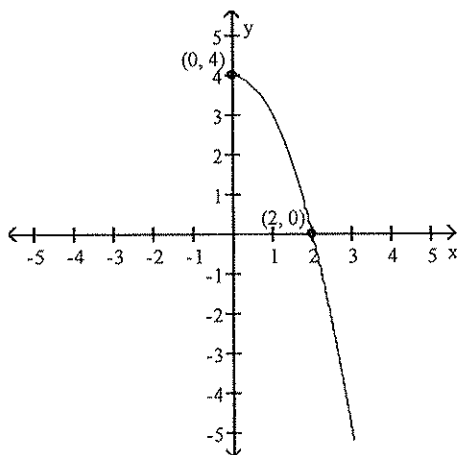
8) \_\_\_\_\_

- A)  $x = 5$
- B)  $y = -8$
- C)  $y = 5$
- D)  $x = -8$

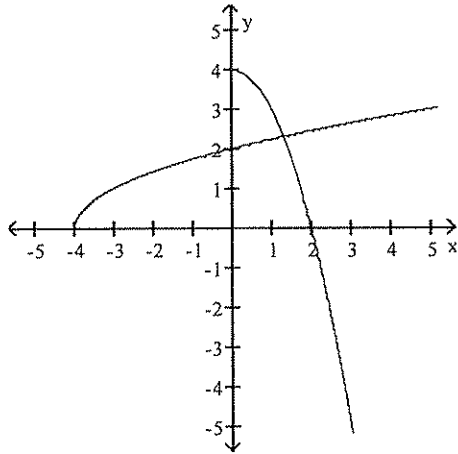
Draw a complete graph so that it has the given type of symmetry.

9) Symmetric with respect to the y-axis

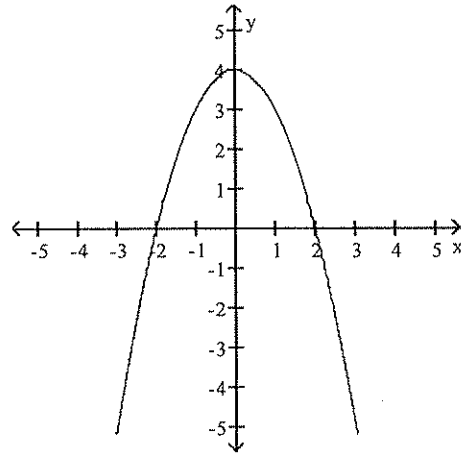
9) \_\_\_\_\_



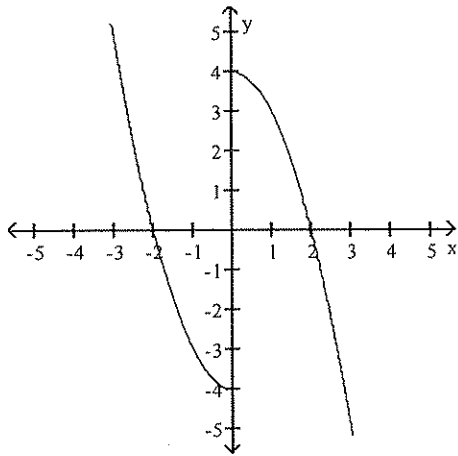
A)



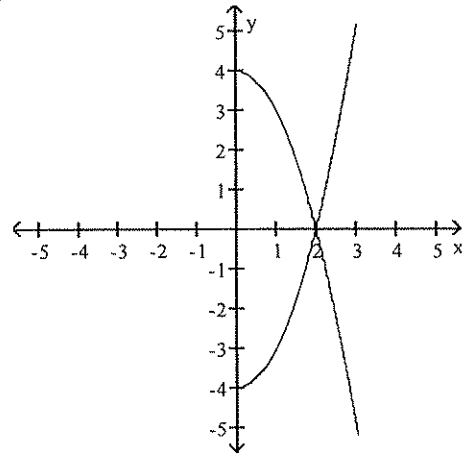
B)



C)



D)



Write a general formula to describe the variation.

10) The illumination  $I$  produced on a surface by a source of light varies directly as the candlepower  $c$  of the source and inversely as the square of the distance  $d$  between the source and the surface. 10) \_\_\_\_\_

A)  $I = \frac{kc}{d^2}$

B)  $I = \frac{kc^2}{d^2}$

C)  $I = \frac{kd^2}{c}$

D)  $I = kcd^2$

Write the standard form of the equation of the circle with radius  $r$  and center  $(h, k)$ .

11)  $r = 2$ ;  $(h, k) = (9, -6)$

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

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

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

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

Find the center  $(h, k)$  and radius  $r$  of the circle with the given equation.

12)  $(x - 2)^2 + (y - 6)^2 = 100$

A)  $(h, k) = (2, 6)$ ;  $r = 100$

B)  $(h, k) = (2, 6)$ ;  $r = 10$

C)  $(h, k) = (6, 2)$ ;  $r = 100$

D)  $(h, k) = (6, 2)$ ;  $r = 10$

Find an equation for the line, in the indicated form, with the given properties.

13) Containing the points  $(-4, -7)$  and  $(4, 6)$ ; general form

A)  $3x - 2y = -24$

B)  $-3x + 2y = -24$

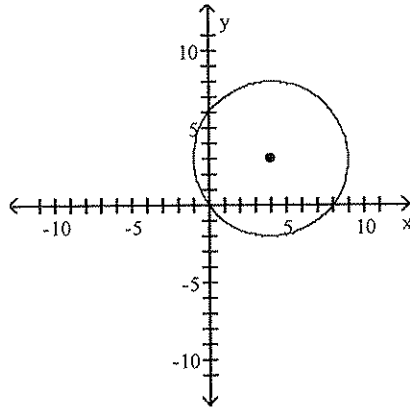
C)  $13x - 8y = 4$

D)  $-13x - 8y = 4$

Write the standard form of the equation of the circle.

14)

14) \_\_\_\_\_



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

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

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

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

Solve the problem.

15) If the force acting on an object stays the same, then the acceleration of the object is inversely proportional to its mass. If an object with a mass of 30 kilograms accelerates at a rate of 10 meters per second per second ( $m/sec^2$ ) by a force, find the rate of acceleration of an object with a mass of 6 kilograms that is pulled by the same force.

15) \_\_\_\_\_

A)  $50 m/sec^2$

B)  $40 m/sec^2$

C)  $2 m/sec^2$

D)  $45 m/sec^2$

Write a general formula to describe the variation.

16) R varies directly with g and inversely with the square of h;  $R = 3$  when  $g = 3$  and  $h = 5$ .

16) \_\_\_\_\_

A)  $R = 25gh^2$

B)  $R = 5 \frac{g}{h^2}$

C)  $R = 25 \frac{g}{h^2}$

D)  $R = 5 \frac{h^2}{g}$

Determine whether the graph of the equation is symmetric with respect to the x-axis, the y-axis, and/or the origin.

17)  $y^2 - x - 81 = 0$

17) \_\_\_\_\_

A) origin

B) x-axis

C) y-axis

D) x-axis, y-axis, origin

E) none

Find the slope and y-intercept of the line.

18)  $4x + y = 11$

18) \_\_\_\_\_

A) slope =  $\frac{4}{11}$ ; y-intercept =  $\frac{1}{11}$

B) slope =  $-4$ ; y-intercept =  $11$

C) slope =  $4$ ; y-intercept =  $11$

D) slope =  $-\frac{1}{4}$ ; y-intercept =  $\frac{11}{4}$

Solve the inequality. Express your answer using interval notation.

19)  $|x + 11| - 6 \leq -3$

19) \_\_\_\_\_

A)  $[-4, 2]$

B)  $[4, -3]$

C)  $(-\infty, -4)$  or  $(2, \infty)$

D) no solution

Solve the inequality. Express your answer in set notation.

20)  $x^2 \leq 25$

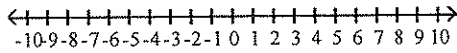
- A)  $\{x \mid -5 < x < 5\}$   
 C)  $\{x \mid x \leq 5\}$

- B)  $\{x \mid -5 \leq x \leq 5\}$   
 D)  $\{x \mid x \leq -5 \text{ or } x \geq 5\}$

20) \_\_\_\_\_

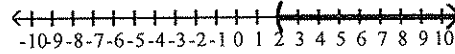
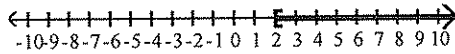
Write the interval as an inequality involving  $x$ , and illustrate the inequality using the real number line.

21)  $[2, \infty)$



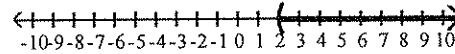
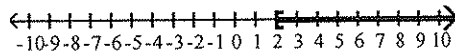
A)  $x > 2$

B)  $x \geq 2$



C)  $x \geq 2$

D)  $x > 2$



21) \_\_\_\_\_

Write the expression in the standard form  $a + bi$ .

22)  $(1 + i)^7$

A)  $-8 - 8i$

B)  $8 + 8i$

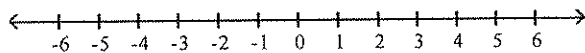
C)  $8 - 8i$

D)  $8 + i$

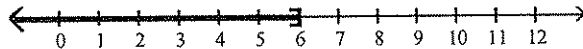
22) \_\_\_\_\_

Solve the inequality. Express your answer using interval notation.

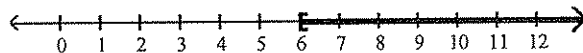
23)  $0 < (5x - 25)^{-1} < \frac{1}{5}$



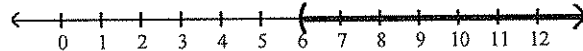
A)  $(-\infty, 6]$



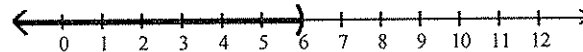
B)  $[6, \infty)$



C)  $(6, \infty)$



D)  $(-\infty, 6)$



23) \_\_\_\_\_

Find the real solutions, if any, of the equation. Use the quadratic formula.

24)  $7x^2 = -8x - 2$

A)  $\left\{ \frac{-4 - \sqrt{2}}{14}, \frac{-4 + \sqrt{2}}{14} \right\}$

B)  $\left\{ \frac{-8 - \sqrt{2}}{7}, \frac{-8 + \sqrt{2}}{7} \right\}$

C)  $\left\{ \frac{-4 - \sqrt{2}}{7}, \frac{-4 + \sqrt{2}}{7} \right\}$

D)  $\left\{ \frac{-4 - \sqrt{30}}{7}, \frac{-4 + \sqrt{30}}{7} \right\}$

24) \_\_\_\_\_

Solve the inequality. Express your answer in set notation.

25)  $x^2 \geq 49$

A)  $\{x \mid -7 \leq x \leq 7\}$

C)  $\{x \mid x < -7 \text{ or } x \geq 7\}$

B)  $\{x \mid x \leq -7 \text{ or } x \geq 7\}$

D)  $\{x \mid x < -7 \text{ or } x > 7\}$

25) \_\_\_\_\_

Solve the equation.

26)  $\frac{1}{x} + \frac{1}{x-8} = \frac{x-7}{x-8}$

A)  $\{8\}$

B)  $\{-1\}$

C)  $\{1\}$

D)  $\{-8\}$

26) \_\_\_\_\_

27)  $9x - 18 = 3x - 48$

A)  $\{-8\}$

B)  $\{8\}$

C)  $\{5\}$

D)  $\{-5\}$

27) \_\_\_\_\_

Find the real solutions of the equation.

28)  $\sqrt[3]{1+x} = -1$

A)  $\{-1\}$

B)  $\{1\}$

C)  $\{-2\}$

D)  $\{2\}$

28) \_\_\_\_\_

Solve the equation.

29)  $6x - (4x - 1) = 2$

A)  $\{\frac{1}{2}\}$

B)  $\{-\frac{1}{10}\}$

C)  $\{-\frac{1}{2}\}$

D)  $\{\frac{1}{10}\}$

29) \_\_\_\_\_

30)  $|x| = 2$

A)  $\{2\}$

B)  $\{-2\}$

C)  $\{-2, 2\}$

D)  $\{4\}$

30) \_\_\_\_\_

Solve the equation by the Square Root Method.

31)  $(2x - 1)^2 = 81$

A)  $\{10, -8\}$

B)  $\{8, -10\}$

C)  $\{4, -5\}$

D)  $\{5, -4\}$

31) \_\_\_\_\_

Solve the equation by factoring.

32)  $49x^2 - 84x + 36 = 0$

A)  $\{\frac{7}{6}\}$

B)  $\{-\frac{6}{7}\}$

C)  $\{-\frac{7}{6}\}$

D)  $\{\frac{6}{7}\}$

32) \_\_\_\_\_

Find the real solutions of the equation.

33)  $\sqrt{2x+3} - \sqrt{x+1} = 1$

A)  $\{3\}$

B)  $\{-3, -1\}$

C)  $\{3, -1\}$

D) no real solution

33) \_\_\_\_\_

Solve the equation.

34)  $\frac{5-x}{x} + \frac{3}{4} = \frac{7}{x}$

A)  $\{8\}$

B)  $\{-\frac{8}{7}\}$

C)  $\{-8\}$

D)  $\{-4\}$

34) \_\_\_\_\_

**Solve the problem.**

35) Don James wants to invest \$62,000 to earn \$6700 per year. He can invest in B-rated bonds paying 14% per year or in a Certificate of Deposit (CD) paying 8% per year. How much money should be invested in each to realize exactly \$6700 in interest per year? 35) \_\_\_\_\_

- A) \$32,000 in B-rated bonds and \$30,000 in a CD
- B) \$29,000 in B-rated bonds and \$33,000 in a CD
- C) \$33,000 in B-rated bonds and \$29,000 in a CD
- D) \$30,000 in B-rated bonds and \$32,000 in a CD

36) The manager of a coffee shop has one type of coffee that sells for \$5 per pound and another type that sells for \$11 per pound. The manager wishes to mix 90 pounds of the \$11 coffee to get a mixture that will sell for \$10 per pound. How many pounds of the \$5 coffee should be used? 36) \_\_\_\_\_

- A) 18 lb
- B) 54 lb
- C) 9 lb
- D) 108 lb

37) An airplane flies 500 miles with the wind and 340 against the wind in the same length of time. If the speed of the wind is 40, what is the speed of the airplane in still air? 37) \_\_\_\_\_

- A) 215 mph
- B) 85 mph
- C) 200 mph
- D) 210 mph

38) An experienced bank auditor can check a bank's deposits twice as fast as a new auditor. Working together it takes the auditors 18 hours to do the job. How long would it take the experienced auditor working alone? 38) \_\_\_\_\_

- A) 36 hr
- B) 27 hr
- C) 18 hr
- D) 54 hr

**Find the distance  $d(P_1, P_2)$  between the points  $P_1$  and  $P_2$ .**

39)  $P_1 = (4, 2)$ ;  $P_2 = (-6, -7)$  39) \_\_\_\_\_

- A)  $\sqrt{181}$
- B) 90
- C)  $\sqrt{19}$
- D) 1

**Find the midpoint of the line segment joining the points  $P_1$  and  $P_2$ .**

40)  $P_1 = (8, 5)$ ;  $P_2 = (2, 2)$  40) \_\_\_\_\_

- A) (10, 7)
- B)  $(\frac{7}{2}, 5)$
- C) (6, 3)
- D)  $(5, \frac{7}{2})$

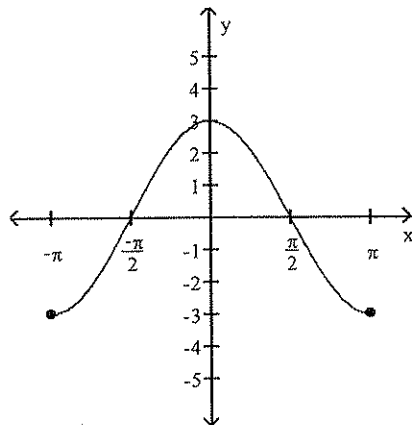
**Solve the problem.**

41) If  $(-5, -2)$  is the endpoint of a line segment, and  $(-7, -5)$  is its midpoint, find the other endpoint. 41) \_\_\_\_\_

- A)  $(-1, 4)$
- B)  $(-11, -6)$
- C)  $(-9, -8)$
- D)  $(-9, 1)$

List the intercepts of the graph.

42)



- A)  $\left(-\frac{\pi}{2}, 0\right), (3, 0), \left(\frac{\pi}{2}, 0\right)$   
 C)  $\left(0, -\frac{\pi}{2}\right), (0, 3), \left(0, \frac{\pi}{2}\right)$

- B)  $\left(-\frac{\pi}{2}, 0\right), (0, 3), \left(\frac{\pi}{2}, 0\right)$   
 D)  $\left(0, -\frac{\pi}{2}\right), (3, 0), \left(0, \frac{\pi}{2}\right)$

42) \_\_\_\_\_

List the intercepts for the graph of the equation.

43)  $x^2 + y - 81 = 0$

- A)  $(-9, 0), (0, -81), (9, 0)$   
 C)  $(0, -9), (81, 0), (0, 9)$

- B)  $(-9, 0), (0, 81), (9, 0)$   
 D)  $(9, 0), (0, 81), (0, -81)$

43) \_\_\_\_\_

List the intercepts and type(s) of symmetry, if any.

44)  $y^2 = x + 9$

- A) intercepts:  $(-9, 0), (0, 3), (0, -3)$   
 symmetric with respect to x-axis  
 C) intercepts:  $(0, -9), (3, 0), (-3, 0)$   
 symmetric with respect to y-axis

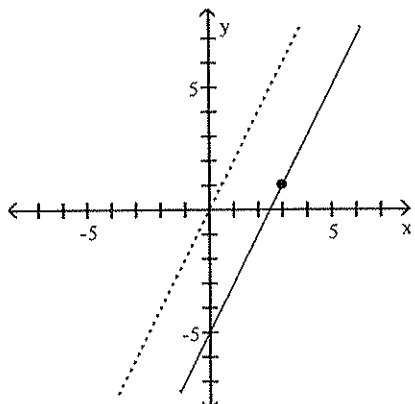
- B) intercepts:  $(0, 9), (3, 0), (-3, 0)$   
 symmetric with respect to y-axis  
 D) intercepts:  $(9, 0), (0, 3), (0, -3)$   
 symmetric with respect to x-axis

44) \_\_\_\_\_

Find an equation for the line with the given properties.

- 45) The solid line L contains the point  $(3, 1)$  and is parallel to the dotted line whose equation is  $y = 2x$ .  
 Give the equation for the line L in slope-intercept form.

45) \_\_\_\_\_



A)  $y - 1 = 2(x - 3)$

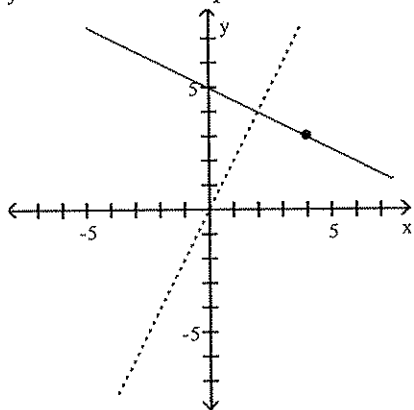
B)  $y = 2x - 2$

C)  $y = 2x + b$

D)  $y = 2x - 5$



46) The solid line L contains the point (4, 3) and is perpendicular to the dotted line whose equation is  $y = 2x$ . Give the equation of line L in slope-intercept form. 46) \_\_\_\_\_



A)  $y = \frac{1}{2}x + 5$

B)  $y - 3 = 2(x - 4)$

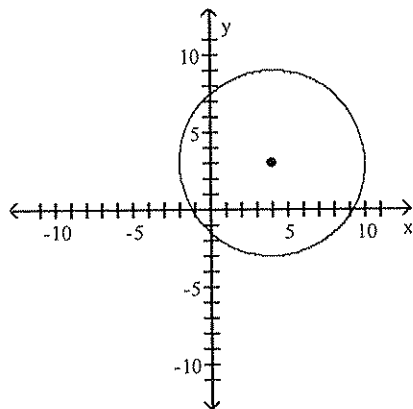
C)  $y - 3 = -\frac{1}{2}(x - 4)$

D)  $y = -\frac{1}{2}x + 5$

Write the standard form of the equation of the circle.

47)

47) \_\_\_\_\_



A)  $(x - 3)^2 + (y - 4)^2 = 36$

B)  $(x + 3)^2 + (y + 4)^2 = 36$

C)  $(x - 4)^2 + (y - 3)^2 = 36$

D)  $(x + 4)^2 + (y + 3)^2 = 36$

Write the standard form of the equation of the circle with radius  $r$  and center  $(h, k)$ .

48)  $r = 9$ ;  $(h, k) = (-7, -3)$

48) \_\_\_\_\_

A)  $(x + 7)^2 + (y + 3)^2 = 81$

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

C)  $(x - 7)^2 + (y - 3)^2 = 81$

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

Answer Key

Testname: PROBS\_EXAM1

- 1) A
- 2) C
- 3) B
- 4) C
- 5) A
- 6) C
- 7) D
- 8) C
- 9) B
- 10) A
- 11) B
- 12) B
- 13) C
- 14) C
- 15) A
- 16) C
- 17) B
- 18) B
- 19) A
- 20) B
- 21) C
- 22) C
- 23) C
- 24) C
- 25) B
- 26) C
- 27) D
- 28) C
- 29) A
- 30) C
- 31) D
- 32) D
- 33) C
- 34) C
- 35) B
- 36) A
- 37) D
- 38) B
- 39) A
- 40) D
- 41) C
- 42) B
- 43) B
- 44) A
- 45) D
- 46) D
- 47) C
- 48) A