

Use the square root property to solve the equation.

- 1) $x^2 = 49$ 1) _____
 A) {24.5} B) {7, -7} C) {8, -8} D) {7}
- 2) $-5k^2 + 125 = 0$ 2) _____
 A) {5, -5} B) {10, -10} C) {5} D) {-72}
- 3) $(p - 3)^2 = 7$ 3) _____
 A) $\{\sqrt{7} - 3, -\sqrt{7} - 3\}$ B) $\{3 + \sqrt{7}\}$
 C) $\{\sqrt{7} - \sqrt{-3}\}$ D) $\{3 + \sqrt{7}, 3 - \sqrt{7}\}$
- 4) $(3s + 8)^2 = 36$ 4) _____
 A) $\{-\frac{2}{3}, 0\}$ B) $\{\frac{28}{3}\}$ C) $\{-\frac{2}{3}, -\frac{14}{3}\}$ D) $\{\frac{2}{3}, \frac{14}{3}\}$

Solve the problem using Galileo's formula, $d = 16t^2$. Round your answer to the nearest tenth.

- 5) A young boy is delighted to drop various objects from a hotel balcony to the ground below. If he is 177 ft above the ground, how long does it take for one of the objects to fall to the ground? 5) _____
 A) 11.1 sec B) 3.3 sec C) 177.0 sec D) 13.3 sec

Find the term that should be added to the expression to form a perfect square trinomial. Write the resulting perfect square trinomial in factored form.

- 6) $x^2 + 4x +$ 6) _____
 A) 16; $(x + 4)^2$ B) 4; $(x + 2)^2$ C) 4; $(x - 2)^2$ D) 0; $(x + 2)^2$
- 7) $x^2 - 12x +$ 7) _____
 A) 36; $(x + 6)^2$ B) 36; $(x - 12)^2$ C) 0; $(x - 6)^2$ D) 36; $(x - 6)^2$
- 8) $x^2 - 9x +$ 8) _____
 A) 0; $(x - \frac{9}{2})^2$ B) 81; $(x - 9)^2$ C) $\frac{81}{4}$; $(x + \frac{9}{2})^2$ D) $\frac{81}{4}$; $(x - \frac{9}{2})^2$

Determine the number that will complete the square to solve the equation after the constant term has been written on the right side. Do not actually solve.

- 9) $w^2 - 6w - 10 = 0$ 9) _____
 A) 0 B) -3 C) 9 D) 25
- 10) $5x^2 + x - 5 = 0$ 10) _____
 A) 100 B) $\frac{1}{4}$ C) $\frac{1}{100}$ D) $-\frac{1}{100}$

Solve the equation by completing the square.

- 11) $a^2 - 10a + 21 = 0$ 11) _____
 A) {7, 3} B) {5, -5} C) {-7, -3} D) {18, 3}
- 12) $4x^2 - 3x - 7 = 0$ 12) _____
 A) $\{\frac{4}{7}, 0\}$ B) $\{\frac{7}{4}, -1\}$ C) $\{\frac{4}{7}, 1\}$ D) $\{\frac{4}{7}, -1\}$

13) $15m^2 + 11m = 0$

A) $\{0\}$

B) $\left\{-\frac{11}{15}, 0\right\}$

C) $\left\{\frac{11}{15}, 0\right\}$

D) $\left\{\frac{11}{15}, -\frac{11}{15}\right\}$

13) _____

14) $0.1x^2 - 0.2x - 0.5 = 0$

A) $\{2 + \sqrt{6}, 2 - \sqrt{6}\}$

B) $\{2 - \sqrt{6}\}$

C) $\{1 + \sqrt{6}\}$

D) $\{1 + \sqrt{6}, 1 - \sqrt{6}\}$

14) _____

15) $p^2 + 3p - 9 = 0$

A) $\left\{\frac{3 + 3\sqrt{5}}{2}\right\}$

B) $\{-3 + 3\sqrt{5}, -3 - 3\sqrt{5}\}$

C) $\left\{\frac{-3 + 3\sqrt{5}}{2}, \frac{-3 - 3\sqrt{5}}{2}\right\}$

D) $\left\{\frac{-3 - 3\sqrt{5}}{2}\right\}$

15) _____

Use the quadratic formula to solve the equation. (All solutions are real numbers.)

16) $a^2 + 14a + 40 = 0$

A) $\{-10, -4\}$

B) $\{-20, -8\}$

C) $\{2\sqrt{10}, -2\sqrt{10}\}$

D) $\{4, 10\}$

16) _____

17) $7x^2 - 2x - 9 = 0$

A) $\left\{\frac{9}{7}, -1\right\}$

B) $\left\{\frac{7}{9}, 0\right\}$

C) $\left\{\frac{7}{9}, 1\right\}$

D) $\left\{\frac{7}{9}, -1\right\}$

17) _____

18) $x^2 = 9 - 4x$

A) $\{-1 + \sqrt{13}, -1 - \sqrt{13}\}$

B) $\{-2 + \sqrt{13}, -2 - \sqrt{13}\}$

C) $\{2 + \sqrt{13}\}$

D) $\{-2 + 2\sqrt{13}, -2 - 2\sqrt{13}\}$

18) _____

19) $\frac{z^2}{3} = \frac{z}{2} + \frac{5}{6}$

A) $\{-1\}$

B) $\left\{\frac{5}{2}\right\}$

C) $\left\{\frac{3 + 2\sqrt{10}}{4}, \frac{3 - 2\sqrt{10}}{4}\right\}$

D) $\left\{-1, \frac{5}{2}\right\}$

19) _____

20) $(2x - 1)(x + 1) = 6$

A) $\left\{\frac{1 + \sqrt{57}}{4}, \frac{1 - \sqrt{57}}{4}\right\}$

B) $\left\{\frac{-1 + \sqrt{21}}{2}, \frac{-1 - \sqrt{21}}{2}\right\}$

C) $\left\{\frac{-1 + \sqrt{57}}{4}, \frac{-1 - \sqrt{57}}{4}\right\}$

D) $\left\{\frac{1 + \sqrt{57}}{2}, \frac{1 - \sqrt{57}}{2}\right\}$

20) _____

Use the quadratic formula to solve the equation.

21) $x^2 + x + 4 = 0$

A) $\left\{\frac{1 + i\sqrt{15}}{2}, \frac{1 - i\sqrt{15}}{2}\right\}$

B) $\left\{\frac{1 + \sqrt{15}}{2}, \frac{1 - \sqrt{15}}{2}\right\}$

C) $\left\{\frac{-1 + \sqrt{15}}{2}, \frac{-1 - \sqrt{15}}{2}\right\}$

D) $\left\{\frac{-1 + i\sqrt{15}}{2}, \frac{-1 - i\sqrt{15}}{2}\right\}$

21) _____

22) $8x^2 + 7x = -2$

A) $\left\{ \frac{7 + i\sqrt{15}}{16}, \frac{7 - i\sqrt{15}}{16} \right\}$
 C) $\left\{ \frac{-7 + \sqrt{15}}{16}, \frac{-7 - \sqrt{15}}{16} \right\}$

B) $\left\{ \frac{-7 + i\sqrt{15}}{16}, \frac{-7 - i\sqrt{15}}{16} \right\}$
 D) $\left\{ \frac{7 + \sqrt{15}}{16}, \frac{7 - \sqrt{15}}{16} \right\}$

22) _____

23) $2x^2 = -5x - 7$

A) $\left\{ \frac{5 + \sqrt{31}}{4}, \frac{5 - \sqrt{31}}{4} \right\}$
 C) $\left\{ \frac{5 + i\sqrt{31}}{4}, \frac{5 - i\sqrt{31}}{4} \right\}$

B) $\left\{ \frac{-5 + \sqrt{31}}{4}, \frac{-5 - \sqrt{31}}{4} \right\}$
 D) $\left\{ \frac{-5 + i\sqrt{31}}{4}, \frac{-5 - i\sqrt{31}}{4} \right\}$

23) _____

Use the discriminant to determine whether the equation has two rational solutions, one rational solution, two irrational solutions, or two nonreal complex solutions. Do not actually solve.

24) $s^2 + 3s - 4 = 0$

- A) Two rational solutions
 C) One rational solution

- B) Two nonreal complex solutions
 D) Two irrational solutions

24) _____

25) $t^2 + 8t + 16 = 0$

- A) Two nonreal complex solutions
 C) Two rational solutions

- B) Two irrational solutions
 D) One rational solution

25) _____

26) $v^2 + 7v - 2 = 0$

- A) One rational solution
 C) Two nonreal complex solutions

- B) Two irrational solutions
 D) Two rational solutions

26) _____

27) $w^2 - 3w + 4 = 0$

- A) Two irrational solutions
 C) Two rational solutions

- B) Two nonreal complex solutions
 D) One rational solution

27) _____

Use the discriminant to determine if the equation can be solved by factoring. If the equation can be solved by factoring, then factor it.

28) $b^2 - 13b + 42 = 0$

- A) $(b - 6)(b - 7) = 0$
 C) $(b - 8)(b + 5) = 0$

- B) $(b + 6)(b + 7) = 0$
 D) Cannot be solved by factoring

28) _____

29) $c^2 - 12c + 36 = 0$

- A) $(c - 6)(c + 6) = 0$
 C) Cannot be solved by factoring

- B) $(c + 6)^2 = 0$
 D) $(c - 6)^2 = 0$

29) _____

30) $d^2 - 8d - 5 = 0$

- A) $(d - 5)(d - 1) = 0$
 C) Cannot be solved by factoring

- B) $(d - 2.2)^2 = 0$
 D) $(d - 6)(d + 4) = 0$

30) _____

Solve the equation.

31) $x - 2 = \frac{3}{x}$ 31) _____

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

B) $\left\{-\frac{1}{3}, 1\right\}$

C) $\left\{1, \frac{1}{3}\right\}$

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

32) $1 - \frac{4}{x} - \frac{32}{x^2} = 0$ 32) _____

A) $\{-8, 4\}$

B) $\{8, -4\}$

C) $\{8, 4\}$

D) $\{-8, -4\}$

33) $\frac{18}{x-2} = 1 + \frac{20}{x+2}$ 33) _____

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

B) \emptyset

C) $\{-20, 10\}$

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

34) $s = 128 + 8\sqrt{s}$ 34) _____

A) $\{512\}$

B) $\{128\}$

C) $\{192\}$

D) $\{256\}$

35) $16y = \sqrt{1 - 24y}$ 35) _____

A) $\left\{-\frac{1}{8}\right\}$

B) $\left\{\frac{1}{16}\right\}$

C) $\left\{\frac{1}{32}\right\}$

D) $\left\{\frac{1}{8}\right\}$

36) $\sqrt{14y - 21} = y + 2$ 36) _____

A) $\{-5\}$

B) $\{-4\}$

C) $\{5\}$

D) $\{7\}$

37) $(3m - 7)^2 + 3(3m - 7) - 18 = 0$ 37) _____

A) $\left\{\frac{1}{3}, \frac{10}{3}\right\}$

B) $\left\{\frac{1}{3}, -\frac{10}{3}\right\}$

C) $\left\{-\frac{13}{7}, \frac{4}{3}\right\}$

D) $\left\{\frac{13}{3}, -\frac{4}{3}\right\}$

38) $(3p - 9)^2 = -2(3p - 9) + 15$ 38) _____

A) $\{-5, 3\}$

B) $\left\{-\frac{4}{3}, -4\right\}$

C) $\left\{\frac{4}{3}, 4\right\}$

D) $\left\{-\frac{14}{3}, -2\right\}$

39) $x^4 - 3x^2 - 4 = 0$ 39) _____

A) $\{2i, -2i, i, -i\}$

B) $\{2, -2, 1, -1\}$

C) $\{1, -1, 2i, -2i\}$

D) $\{2, -2, i, -i\}$

40) $36x^4 - 85x^2 + 49 = 0$ 40) _____

A) $\left\{-1, -\frac{6}{7}, \frac{6}{7}, 1\right\}$

B) $\left\{1, \frac{7}{6}\right\}$

C) $\left\{-\frac{7}{6}, -1, 1, \frac{7}{6}\right\}$

D) $\left\{-1, -\frac{6}{7}\right\}$

41) $(m - 2)^{2/3} - 5(m - 2)^{1/3} + 4 = 0$ 41) _____

A) $\{3, 6\}$

B) $\{3, 66\}$

C) $\{-3, 66\}$

D) $\{-3, 0\}$

Solve the problem.

- 42) Two cars leave an intersection. One car travels north; the other east. When the car traveling north had gone 12 mi, the distance between the cars was 4 mi more than the distance traveled by the car heading east. How far had the eastbound car traveled? 42) _____
A) 12 mi B) 24 mi C) 20 mi D) 16 mi

- 43) A ladder is resting against a wall. The top of the ladder touches the wall at a height of 18 ft. Find the length of the ladder if the length is 6 ft more than its distance from the wall. 43) _____
A) 18 ft B) 24 ft C) 36 ft D) 30 ft

Solve the problem, if possible. Round your answer to the nearest tenth, when appropriate.

- 44) The area of a square is 81 cm^2 . If the same amount is added to one dimension and removed from the other, the resulting rectangle has an area 9 cm^2 less than the area of the square. How much is added and subtracted? 44) _____
A) 4 cm
B) 9 cm
C) 3 cm
D) Cannot be determined without additional information

- 45) A parking lot measures 100 ft by 150 ft. A sidewalk of uniform width is to completely surround the lot. If the sidewalk can cover 1016 ft^2 , how wide will the sidewalk be? 45) _____
A) 2.5 ft B) 1.5 ft C) 3 ft D) 2 ft

Solve the problem. Round your answer to the nearest tenth, when appropriate.

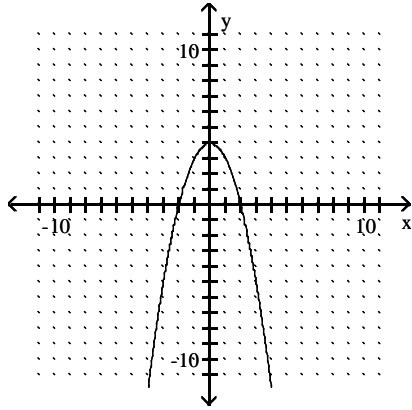
- 46) The position of an object moving in a straight line is given by $s(t) = t^2 - 8t$, where s is in feet and t is the time in seconds the object has been in motion. How long will it take the object to move 7 ft? 46) _____
A) 8.0 sec B) 8.8 sec C) 8.6 sec D) 0.7 sec

Identify which graph matches the equation.

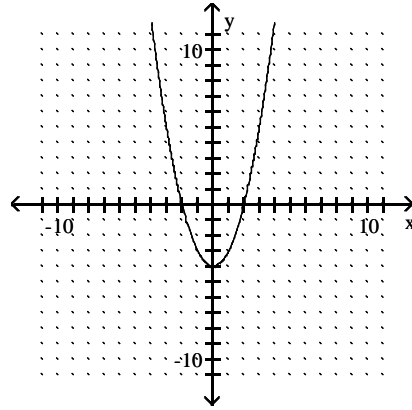
47) $f(x) = -x^2 + 4$

47) _____

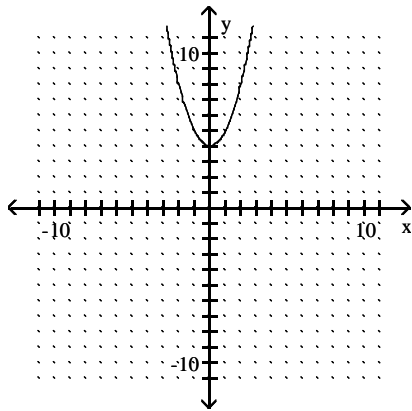
A)



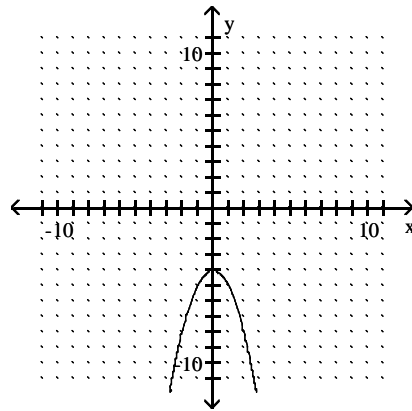
B)



C)



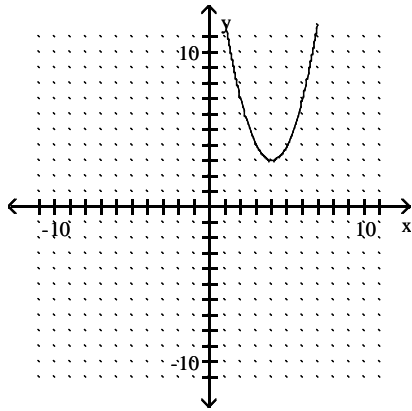
D)



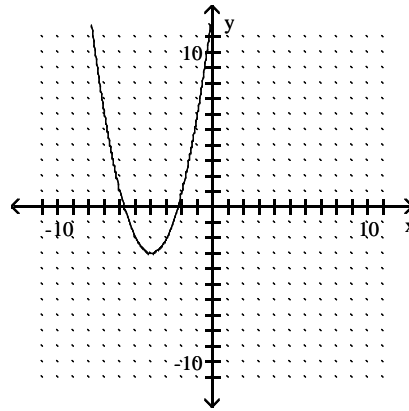
48) $f(x) = (x + 4)^2 - 3$

48) _____

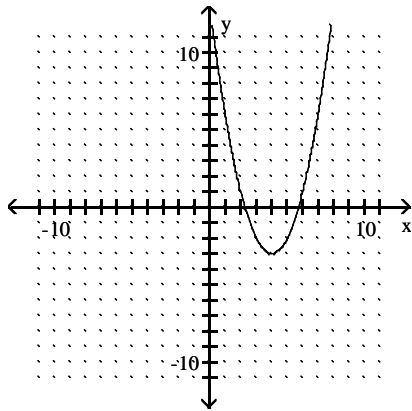
A)



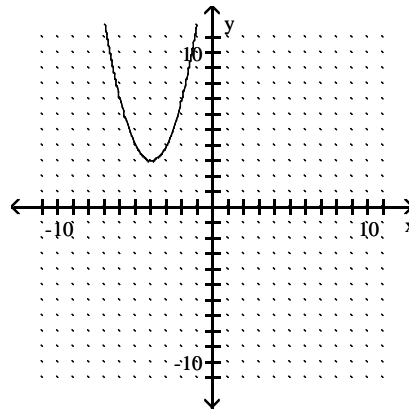
B)



C)



D)



Identify the vertex of the given parabola.

49) $f(x) = (x + 3)^2 + 3$

49) _____

A) (-3, 3)

B) (0, 3)

C) (-3, -3)

D) (3, 0)

50) $f(x) = x^2 + 4$

50) _____

A) (0, -4)

B) (0, 4)

C) (4, 0)

D) (-4, 0)

51) $f(x) = (x + 2)^2 + 9$

51) _____

A) (9, -2)

B) (9, -4)

C) (-2, 9)

D) (-9, 2)

52) $f(x) = -(x + 2)^2 - 2$

52) _____

A) (2, 2)

B) (-2, 2)

C) (2, -2)

D) (-2, -2)

53) $f(x) = (x - 9)^2$

53) _____

A) (0, 9)

B) (-9, 0)

C) (0, -9)

D) (9, 0)

For the quadratic function, tell whether the graph opens up or down and whether the graph is wider, narrower, or the same shape as the graph of $f(x) = x^2$.

54) $f(x) = -3x^2$

54) _____

A) Up; wider

B) Down; narrower

C) Up; narrower

D) Down; wider

55) $f(x) = \frac{1}{9}x^2 - 3$ 55) _____
 A) Up; wider B) Up; narrower
 C) Down; narrower D) Down; wider

56) $f(x) = x^2 + 19$ 56) _____
 A) Up; same B) Down; same C) Up; wider D) Up; narrower

Find the vertex of the parabola.

57) $f(x) = x^2 - 3$ 57) _____
 A) (3, 0) B) (-3, 0) C) (0, 3) D) (0, -3)

58) $f(x) = 3x^2 + 12x + 16$ 58) _____
 A) (2, -4) B) (-4, 2) C) (-2, 4) D) (4, -2)

Decide whether the graph of the equation opens up, down, to the left, or to the right; and whether it is wider, narrower, or the same shape as the graph of $f(x) = x^2$ (or $x = y^2$).

59) $f(x) = -3x^2 - 3x$ 59) _____
 A) Up; wider B) Up; narrower
 C) Down; wider D) Down; narrower

60) $f(x) = \frac{1}{6}x^2 - 4x - 1$ 60) _____
 A) Down; narrower B) Up; narrower
 C) Down; wider D) Up; wider

61) $f(x) = -3x^2 + 3x + 9$ 61) _____
 A) Down; narrower B) Up; wider
 C) Down; wider D) Up; narrower

62) $f(x) = x^2 + 2x + 17$ 62) _____
 A) Up; narrower B) Down; same C) Up; same D) Up; wider

Use the discriminant of the equation to determine the number of x-intercepts.

63) $f(x) = x^2 + 8x + 21$ 63) _____
 A) Two x-intercepts B) No x-intercepts C) One x-intercept

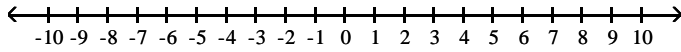
64) $f(x) = -x^2 + 9x + 4$ 64) _____
 A) No x-intercepts B) Two x-intercepts C) One x-intercept

65) $f(x) = 3x^2 - 6x + 3$ 65) _____
 A) No x-intercepts B) Two x-intercepts C) One x-intercept

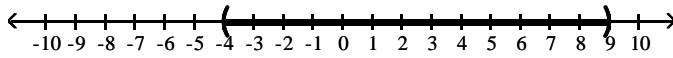
Solve the inequality, and graph the solution set.

66) $(x - 9)(x + 4) > 0$

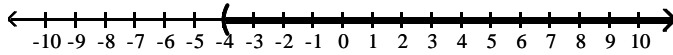
66) _____



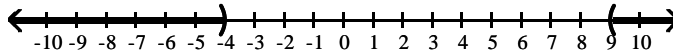
A) $(-4, 9)$



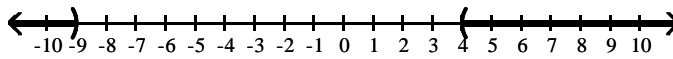
B) $(-4, \infty)$



C) $(-\infty, -4) \cup (9, \infty)$

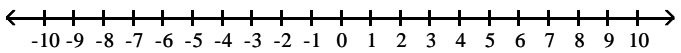


D) $(-\infty, -9) \cup (4, \infty)$

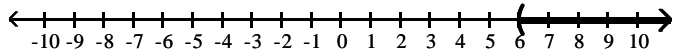


67) $p^2 - 8p + 12 > 0$

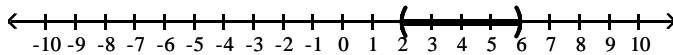
67) _____



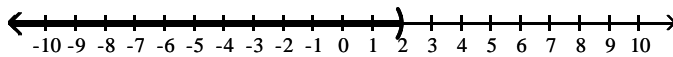
A) $(6, \infty)$



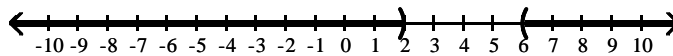
B) $(2, 6)$



C) $(-\infty, 2)$

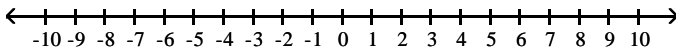


D) $(-\infty, 2) \cup (6, \infty)$

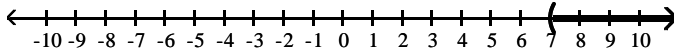


68) $s^2 - 5s - 14 < 0$

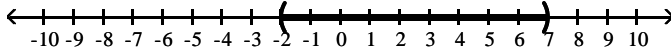
68) _____



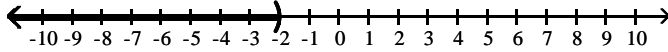
A) $(7, \infty)$



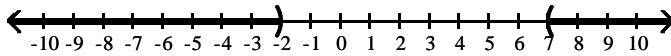
B) $(-2, 7)$



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



D) $(-\infty, -2) \cup (7, \infty)$



Solve the inequality.

69) $(3 + 3x)^2 \geq -16$

69) _____

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

B) $\left[-\frac{7}{3}, \frac{1}{3}\right]$

C) \emptyset

D) $\left(-\infty, -\frac{7}{3}\right) \cup \left(\frac{1}{3}, \infty\right)$

70) $(7 + 4x)^2 \leq -4$

70) _____

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

B) $\left(-\infty, -\frac{9}{4}\right) \cup \left(-\frac{5}{4}, \infty\right)$

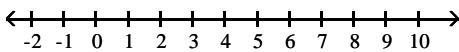
C) \emptyset

D) $\left[-\frac{9}{4}, -\frac{5}{4}\right]$

Solve the inequality, and graph the solution set.

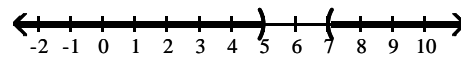
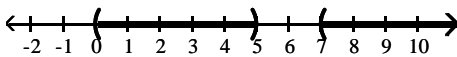
71) $\frac{2x}{7-x} < x$

71) _____



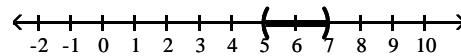
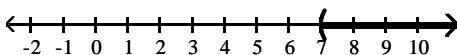
A) $(0, 5) \cup (7, \infty)$

B) $(-\infty, 5) \cup (7, \infty)$



C) $(7, \infty)$

D) $(5, 7)$



Answer Key

Testname: PPQUAD

- | | |
|-------|-------|
| 1) B | 52) D |
| 2) A | 53) D |
| 3) D | 54) B |
| 4) C | 55) A |
| 5) B | 56) A |
| 6) B | 57) D |
| 7) D | 58) C |
| 8) D | 59) D |
| 9) C | 60) D |
| 10) C | 61) A |
| 11) A | 62) C |
| 12) B | 63) B |
| 13) B | 64) B |
| 14) D | 65) C |
| 15) C | 66) C |
| 16) A | 67) D |
| 17) A | 68) B |
| 18) B | 69) A |
| 19) D | 70) C |
| 20) C | 71) A |
| 21) D | |
| 22) B | |
| 23) D | |
| 24) A | |
| 25) D | |
| 26) B | |
| 27) B | |
| 28) A | |
| 29) D | |
| 30) C | |
| 31) D | |
| 32) B | |
| 33) A | |
| 34) D | |
| 35) C | |
| 36) C | |
| 37) A | |
| 38) C | |
| 39) D | |
| 40) C | |
| 41) B | |
| 42) D | |
| 43) D | |
| 44) C | |
| 45) D | |
| 46) B | |
| 47) A | |
| 48) B | |
| 49) A | |
| 50) B | |
| 51) C | |