Exam

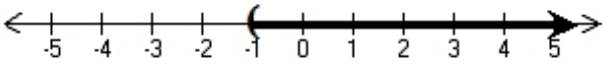
Name_____

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Graph the inequality on a number line.

1) $x > -1$ 1) _____

Answer:



Explanation:

Identify the equation as an identity, a contradiction, or a conditional equation. If conditional, state the solution.

2) $-5(x + 9) + 6x = x - 45$ 2) _____

Answer: Identity
Explanation:

Solve the given equation for the indicated variable.

3) $w = \dfrac{x}{y + z}$; for z. 3) _____

Answer: $z = \dfrac{x - wy}{w}$

Explanation:

Solve.

4) $\dfrac{1}{7n} - \dfrac{1}{8n} = \dfrac{1}{n^2}$ 4) _____

Answer: $n = 56$
Explanation:

Solve the problem.

5) The length of a garden is 5 ft less than twice its width. The area of the garden is 88 ft^2. Find the length and width of the garden. 5) _____

Answer: 11 ft, 8 ft
Explanation:

Perform the indicated operation. Write the result in *a* + *bi* form.

6) $(5 - i)(4 + 3i)$ 6) _____

Answer: $23 + 11i$
Explanation:

Solve the absolute value inequality. Write the solution in interval notation.

7) $|x - 10| > 3$ 7) _____

Answer: $(-\infty, 7) \cup (13, \infty)$

Explanation:

Solve using the zero product property. Be sure the equation is in standard form and factor out any common factors before attempting to solve. Check all answers in the original equation.

8) $-5x^3 = -13x^2 - 6x$ 8) _____

Answer: $x = -\frac{2}{5}, x = 3, x = 0$

Explanation:

Solve the given equation for the indicated variable.

9) $m = npr;$ for p 9) _____

Answer: $p = \frac{m}{nr}$

Explanation:

Solve using the zero product property. Be sure the equation is in standard form and factor out any common factors before attempting to solve. Check all answers in the original equation.

10) $9x^2 + 54x = 0$ 10) _____

Answer: $x = -6, x = 0$

Explanation:

Write the complex number in the standard form *a* + *bi* and clearly identify the values of *a* and *b*.

11) $\frac{6 + \sqrt{-50}}{10}$ 11) _____

Answer: $\frac{3}{5} + \frac{\sqrt{2}}{2}i; a = \frac{3}{5}, b = \frac{\sqrt{2}}{2}$

Explanation:

Solve.

12) $0.4(3.6 - 2.6x) - 5.6 = 0$ 12) _____

Answer: -4

Explanation:

Simplify the radical, if possible. If imaginary, rewrite in terms of *i* and simplify.

13) $\sqrt{-37}$ 13) _____

Answer: $i\sqrt{37}$

Explanation:

Solve using the square root property of equality. Write answers in exact form. If there are no real solutions, so state.

14) $(x - 3)^2 = 100$ 14) _____

Answer: $x = 13, x = -7$

Explanation:

Write the complex number in the standard form *a* + *bi* and clearly identify the values of *a* and *b*.

15) -8 15) _____

Answer: $-8 + 0i$; $a = -8, b = 0$

Explanation:

Solve the given equation for the indicated variable.

16) $\frac{7}{15}x + \frac{3}{10}y = 4$; for y 16) _____

Answer: $y = -\frac{14}{9}x + \frac{40}{3}$

Explanation:

Solve.

17) $n - \frac{5}{n - 4} = 0$ 17) _____

Answer: $n = -1, n = 5$

Explanation:

Divide and write your answer in *a* + *bi* form.

18) $\frac{-20 + 35i}{4 - 7i}$ 18) _____

Answer: -5

Explanation:

Solve by completing the square. Write your answer in exact form.

19) $4x^2 + 2x - 3 = 0$ 19) _____

Answer: $-\frac{1}{4} \pm \frac{\sqrt{13}}{4}$

Explanation:

Perform the indicated operation. Write the result in *a* + *bi* form.

20) $(4 - 9i) + (7 + 7i)$ 20) _____

Answer: $11 - 2i$

Explanation:

Solve.

21) $\frac{3}{x-1} = \frac{6}{x+2}$ 21) _____

Answer: $x = 4$
Explanation:

Fill in the blank so the result is a perfect square trinomial, then factor into a binomial square.

22) $x^2 - 20x +$ ____ 22) _____

Answer: 100; $(x - 10)^2$
Explanation:

Solve the problem.

23) Give the total amount of the mix that results and the worth per pound of the mix when 10 pounds of nuts worth $2.20 per pound are mixed with 10 pounds of nuts worth $4.40 per pound. 23) _____

Answer: 20 pounds, $3.30 per pound
Explanation:

Solve using the square root property of equality. Write answers in exact form and approximate form rounded to hundredths. If there are no real solutions, so state.

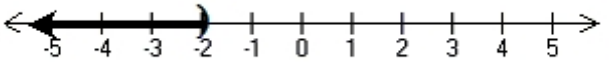
24) $x^2 - 72 = 0$ 24) _____

Answer: $x = \pm 6\sqrt{2} \approx \pm 8.49$
Explanation:

Solve the inequality and write the solution in set notation. Then graph the solution and write it in interval notation.

25) $\frac{3y}{7} + \frac{y}{14} < -1$ 25) _____

Answer: $\{ y \mid y < -2 \}$



$y \in (-\infty, -2)$
Explanation:

Identify the equation as linear or nonlinear. If nonlinear, state why. Do not solve.

26) $\frac{9}{x} - 2.2 = 1$ 26) _____

Answer: nonlinear; the variable is used as a divisor
Explanation:

Determine the allowable values for the expression. Write your answer in interval notation.

27) $\frac{14}{n}$ 27) _____

Answer: $n \in (-\infty, 0) \cup (0, \infty)$
Explanation:

Solve.

28) $\frac{a}{3a + 1} - \frac{a^2 + 14}{3a^2 - 5a - 2} = \frac{6}{a - 2}$ 28) _____

Answer: $a = -1$
Explanation:

Determine the allowable values for the expression. Write your answer in interval notation.

29) $\frac{6}{m - 3}$ 29) _____

Answer: $m \in (-\infty, 3) \cup (3, \infty)$
Explanation:

Solve using *u*-substitution.

30) $(x^2 - x)^2 - 14(x^2 - x) + 24 = 0$ 30) _____

Answer: $x = -3$, $x = -1$, $x = 2$, $x = 4$
Explanation:

Solve using the most efficient method.

31) $2x^2 - 2x - 1 = 0$ 31) _____

Answer: $x = \frac{1 \pm \sqrt{3}}{2}$

Explanation:

Solve the problem.

32) A consultant traveled 465 miles to attend a meeting, traveling 55 mph hours for the first part of the trip, then increasing to a speed of 60 mph for the second part. If the entire trip took 8 hours, how far did the consultant travel at the faster speed? 32) _____

Answer: 300 mi
Explanation:

Identify the equation as an identity, a contradiction, or a conditional equation. If conditional, state the solution.

33) $-6(x + 3) = -3 + 3(-2x - 5)$ 33) _____

Answer: Identity
Explanation:

Solve the absolute value inequality. Write the solution in interval notation.

34) $|8 - x| + 9 < 3$ 34) _____

Answer: $\emptyset$
Explanation:

Compute the special product and write your answer in $a + bi$ form.

35) $(1 + 5i)^2$ 35) _____

Answer: $-24 + 10i$
Explanation:

Solve using the most efficient method.

36) $3x^2 + 13x - 10 = 0$ 36) _____

Answer: $x = \frac{2}{3}, x = -5$

Explanation:

Solve. Simplify your results.

37) $5x^2 - 8x + 5 = 0$ 37) _____

Answer: $\frac{4}{5} \pm \frac{3}{5}i$

Explanation:

Solve.

38) $\sqrt{x + 7} + \sqrt{x - 5} = 6$ 38) _____

Answer: $x = 9$
Explanation:

Simplify the radical, if possible. If imaginary, rewrite in terms of i and simplify.

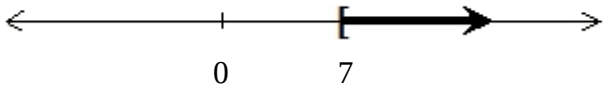
39) $\sqrt{24}$ 39) _____

Answer: $2\sqrt{6}$
Explanation:

Solve the inequality and write the solution in set notation. Then graph the solution and write it in interval notation.

40) $4n - 4 \leq 7n - 25$ 40) _____

Answer: $\{n \mid n \geq 7\}$



$n \in [7, \infty)$
Explanation:

Solve.

41) $3 = \sqrt[3]{2m - 5}$ 41) _____

Answer: $m = 16$
Explanation:

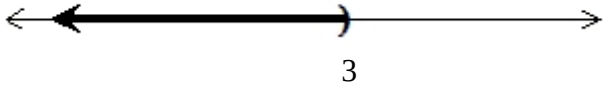
42) $\frac{5}{4}x + 3 = \frac{3}{4}x + 4$ 42) _____

Answer: 2
Explanation:

Solve the compound inequality and graph the solution set.

43) $-4(x + 3) \geq 20$ or $x - 5 < -2$ 43) _____

Answer: $x < 3$



Explanation:

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

Determine the allowable values for the expression. Write your answer in interval notation.

44) $\sqrt{15 - 3n}$ 44) _____

A) $n \in (-\infty, -5) \cup (-5, \infty)$
B) $n \in [5, \infty)$
C) $n \in (-\infty, 5]$
D) $n \in (-\infty, -5]$

Answer: C
Explanation: A)
B)
C)
D)

45) $\frac{x + 10}{4x - 8}$ 45) _____

A) $x \in (-\infty, 10) \cup (10, \infty)$
B) $x \in (-\infty, -10) \cup (-10, \infty)$
C) $x \in (-\infty, -2) \cup (-2, \infty)$
D) $x \in (-\infty, 2) \cup (2, \infty)$

Answer: D
Explanation: A)
B)
C)
D)

Solve the absolute value inequality. Write the solution in interval notation.

46) $3|x + 7| - 6 \geq -3$ 46) _____

A) $(-\infty, -8] \cup [-6, \infty)$ B) $[-8, -6]$

C) $[-4, -10]$ D) $(-\infty, -4] \cup [-10, \infty)$

Answer: A

Explanation: A)
B)
C)
D)

Simplify the radical, if possible. If imaginary, rewrite in terms of *i* and simplify.

47) $-\sqrt{-63}$ 47) _____

A) $3i\sqrt{7}$ B) $-i\sqrt{63}$ C) $-3i\sqrt{7}$ D) $3\sqrt{7}$

Answer: C

Explanation: A)
B)
C)
D)

Simplify using the power of *i*.

48) i^{33} 48) _____

A) -1 B) 1 C) $-i$ D) i

Answer: D

Explanation: A)
B)
C)
D)

Solve the absolute value inequality. Write the solution in interval notation.

49) $3|x + 4| - 9 < -6$ 49) _____

A) $(-\infty, 1) \cup (-9, \infty)$ B) $(-5, -3)$

C) $(1, -9)$ D) $(-\infty, -5) \cup (-3, \infty)$

Answer: B

Explanation: A)
B)
C)
D)

Solve.

50) $-7\sqrt{5x + 10} = -105$ 50) _____

A) 43 B) -7 C) 0 D) 1

Answer: A

Explanation: A)
B)
C)
D)

Solve the absolute value equation. Write the solution in set notation.

51) $-2|x - 4| + 8 = 6$ 51) _____

A) $\{-1, 9\}$ B) $\{-3, 11\}$ C) $\{-7, 15\}$ D) $\{3, 5\}$

Answer: D

Explanation: A)
B)
C)
D)

Solve using the square root property of equality. Write answers in exact form. If there are no real solutions, so state.

52) Solve using the square root property of equality. Write answers in exact form. If there are no real solutions, so state. 52) _____

$(x - 1)^2 + 7 = 2$

A) $1 \pm \sqrt{5}$ B) $-1 \pm \sqrt{5}$

C) $\pm 1\sqrt{5}$ D) no real solutions

Answer: D

Explanation: A)
B)
C)
D)

Solve.

53) $x + \dfrac{12}{x - 6} = 1 + \dfrac{2x}{x - 6}$ 53) _____

A) $x = 3$ B) $x = -3$ C) $x = 6, x = 3$ D) $x = 6, x = -3$

Answer: A

Explanation: A)
B)
C)
D)

54) $\dfrac{5}{y + 4} + \dfrac{11}{y^2 + y - 12} = \dfrac{7}{y - 3}$ 54) _____

A) $y = 16$ B) $y = 16, 12$ C) $y = -16$ D) $y = -16, 12$

Answer: C

Explanation: A)
B)
C)
D)

Determine the intersection or union of sets *A*, *B*, and *C* as indicated, given

***A* = {5, 10, 15, 20}**

***B* = {25, 30, 35, 40}**

***C* = {10, 20, 30, 40}.**

55) Find $A \cup C$. 55) _____

A) {10, 20}
B) {5, 10, 15, 20, 30, 40}
C) { }
D) {5, 15, 30, 40}

Answer: B
Explanation: A)
B)
C)
D)

Use the discriminant to determine whether the given equation has two irrational roots, two rational roots, one repeated root, or two complex roots. Do not solve.

56) $-5x^2 + 3x - 8 = 0$ 56) _____

A) one repeated root
B) two complex roots
C) two rational roots
D) two irrational roots

Answer: B
Explanation: A)
B)
C)
D)

Solve using the most efficient method.

57) $x^2 + 9x = -20$ 57) _____

A) $x = 4, x = 5$ B) $x = 4, x = -5$ C) $x = -4, x = -5$ D) $x = -4, x = 5$

Answer: C
Explanation: A)
B)
C)
D)

Determine the allowable values for the expression. Write your answer in interval notation.

58) $\sqrt{5m - 10}$ 58) _____

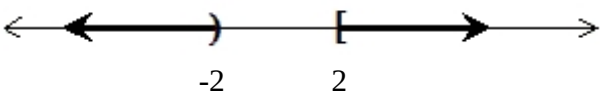
A) $m \in (-\infty, 2]$
B) $m \in (-2, \infty)$
C) $m \in [2, \infty)$
D) $m \in (-\infty, 2) \cup [2, \infty)$

Answer: C
Explanation: A)
B)
C)
D)

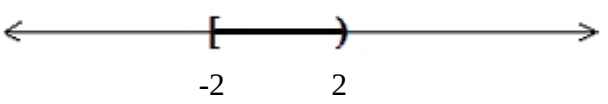
Express the compound inequality graphically.

59) $x \leq 2$ and $x > -2$ 59) _____

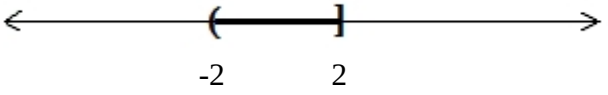
A)



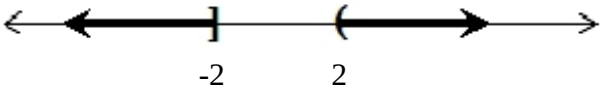
B)



C)



D)



Answer: C

Explanation: A)
B)
C)
D)

Simplify the expression, writing the result in terms of i

60) $\dfrac{3 - \sqrt{-9}}{3}$ 60) _____

A) $1 - 9i$ B) $1 - i$ C) $1 + 9i$ D) $1 + i$

Answer: B

Explanation: A)
B)
C)
D)

Use the discriminant to determine whether the given equation has two irrational roots, two rational roots, one repeated root, or two complex roots. Do not solve.

61) $x^2 - 10 = 5x$ 61) _____

A) two complex roots B) two irrational roots

C) one repeated root D) two rational roots

Answer: B

Explanation: A)
B)
C)
D)

Solve the given equation for the indicated variable.

62) $a = \frac{1}{2} bc^2$; for b 62) _____

A) $b = 2a - c^2$ B) $b = \frac{a - c^2}{2}$ C) $b = \frac{2a}{c^2}$ D) $b = \frac{a}{2c^2}$

Answer: C
Explanation: A)
B)
C)
D)

Determine the intersection or union of sets *A*, *B*, and *C* as indicated, given
***A* = {5, 10, 15, 20}**
***B* = {25, 30, 35, 40}**
***C* = {10, 20, 30, 40}.**

63) Find $A \cap B$. 63) _____

A) {5, 10, 35, 40} B) {5, 10, 15, 20, 25, 30, 35, 40}
C) { } D) {10, 15}

Answer: C
Explanation: A)
B)
C)
D)

Simplify using the power of *i*.

64) i^{70} 64) _____

A) i B) -1 C) $-i$ D) 1

Answer: B
Explanation: A)
B)
C)
D)

Solve using the zero product property. Be sure the equation is in standard form and factor out any common factors before attempting to solve. Check all answers in the original equation.

65) $(m + 5)(m + 6) = 6$ 65) _____

A) $m = 1, m = 0$ B) $m = -8, m = -3$
C) $m = -5, m = -6$ D) $m = 8, m = 3$

Answer: B
Explanation: A)
B)
C)
D)

Solve the problem.

66) An arithmetic student needs at least a 70% average to receive credit for the course. If she scored 66%, 63%, and 99% on the first three exams, what score must she get on the fourth exam to receive credit for the course? 66) _____

A) $x \geq 57\%$ B) $x \geq 50\%$ C) $x \geq 54\%$ D) $x \geq 52\%$

Answer: D
Explanation: A)
B)
C)
D)

Compute the special product and write your answer in $a + bi$ form.

67) $(6 - 4i)(6 + 4i)$ 67) _____

A) $52 + 48i$ B) 20 C) 52 D) $20 - 48i$

Answer: C
Explanation: A)
B)
C)
D)

Solve the absolute value inequality. Write the solution in interval notation.

68) $|x - 10| \leq 4$ 68) _____

A) $(6, 14)$ B) $[6, 14]$
C) $(-\infty, 6) \cup (14, \infty)$ D) $(-\infty, 6] \cup [14, \infty)$

Answer: B
Explanation: A)
B)
C)
D)

Use the discriminant to determine whether the given equation has two irrational roots, two rational roots, one repeated root, or two complex roots. Do not solve.

69) $49x^2 - 14x = -1$ 69) _____

A) two complex roots B) one repeated root
C) two irrational roots D) two rational roots

Answer: B
Explanation: A)
B)
C)
D)

Write in simplified form, then solve.

70) $3x^{\frac{3}{2}} - 10 = 14$ 70) _____

A) $x = 2$ B) $x = 8$ C) $x = 16$ D) $x = 4$

Answer: D

Explanation: A)
B)
C)
D)

Solve the problem.

71) How much pure antifreeze must be added to 12 gallons of 20% antifreeze to make a 40% antifreeze solution? 71) _____

A) 6 gallons B) 8 gallons C) 2 gallons D) 4 gallons

Answer: D

Explanation: A)
B)
C)
D)

Use the discriminant to determine whether the given equation has two irrational roots, two rational roots, one repeated root, or two complex roots. Do not solve.

72) $-2x^2 + 3x + 9 = 0$ 72) _____

A) two complex roots B) two rational roots
C) two irrational roots D) one repeated root

Answer: B

Explanation: A)
B)
C)
D)

Divide and write your answer in *a* + *bi* form.

73) $\frac{11}{4 + 3i}$ 73) _____

A) $\frac{44}{25} - \frac{3}{25}i$ B) $\frac{44}{7} - \frac{3}{7}i$ C) $\frac{44}{25} - \frac{33}{25}i$ D) $\frac{11}{4} + \frac{11}{3}i$

Answer: C

Explanation: A)
B)
C)
D)

Solve the compound inequality.

74) $-0.2 \le 0.7 - x \le 1.8$ 74) _____

A) $-0.9 \le x \le 1.1$ B) $-1.1 \le x \le 0.9$ C) $-2.5 \le x \le 0.5$ D) no solution

Answer: B

Explanation: A)
B)
C)
D)

Simplify using the power of *i*.

75) i^{47} 75) _____

A) i B) 1 C) -1 D) $-i$

Answer: D

Explanation: A)
B)
C)
D)

Solve using the square root property of equality. Write answers in exact form. If there are no real solutions, so state.

76) Solve using the square root property of equality. Write answers in exact form. If there are no real solutions, so state. 76) _____

$(x + 5)^2 = 7$

A) $-5 \pm \sqrt{7}$ B) $\pm 5\sqrt{7}$

C) $5 \pm \sqrt{7}$ D) no real solutions

Answer: A

Explanation: A)
B)
C)
D)

Fill in the blank so the result is a perfect square trinomial, then factor into a binomial square.

77) $x^2 + 5x +$ _____ 77) _____

A) $\frac{5}{2}; \left(x + \frac{5}{4}\right)^2$ B) $\frac{25}{2}; \left(x + \frac{5}{2}\right)^2$ C) $25; (x + 5)^2$ D) $\frac{25}{4}; \left(x + \frac{5}{2}\right)^2$

Answer: D

Explanation: A)
B)
C)
D)

Perform the indicated operation. Write the result in $a + bi$ form.

78) $4i(3 + 7i)$ 78) _____

A) $-16i$ B) $19i$ C) $-28 + 12i$ D) $28 + 12i$

Answer: C
Explanation: A)
B)
C)
D)

Solve by completing the square. Write your answer in exact form.

79) $x^2 - 12x = -27$ 79) _____

A) $x = 3, x = -9$ B) $x = -3, x = -9$ C) $x = 3, x = 9$ D) $x = -3, x = 9$

Answer: C
Explanation: A)
B)
C)
D)

Name the complex conjugate, then find the product.

80) $-5 - i$ 80) _____

A) $5 + i$; 24 B) $-5 + i$; 26 C) $-5 + i$; 24 D) $5 + i$; 26

Answer: B
Explanation: A)
B)
C)
D)

Determine the intersection or union of sets A, B, and C as indicated, given
$A = \{5, 10, 15, 20\}$
$B = \{25, 30, 35, 40\}$
$C = \{10, 20, 30, 40\}$.

81) Find $A \cap C$. 81) _____

A) $\{5, 15, 30, 40\}$ B) $\{10, 20\}$
C) $\{5, 10, 15, 20, 30, 40\}$ D) $\{\ \}$

Answer: B
Explanation: A)
B)
C)
D)

Identify the equation as an identity, a contradiction, or a conditional equation, then state the solution.

82) $-(10x - 16) + 7x = 18 - 2(x + 1)$ 82) _____

A) Identity

B) Conditional; $x = \frac{2}{3}$

C) Conditional; $x = 0$

D) Contradiction

Answer: C
Explanation: A)
B)
C)
D)

Solve the given equation for the indicated variable.

83) $3x - 2y = 6$; for y 83) _____

A) $y = 3x - 3$

B) $y = \frac{3}{2}x - 3$

C) $y = \frac{-3x + 6}{2}$

D) $y = \frac{3x - 3}{2}$

Answer: B
Explanation: A)
B)
C)
D)

Simplify the radical, if possible. If imaginary, rewrite in terms of *i* and simplify.

84) $\sqrt{-64}$ 84) _____

A) $-8i$

B) -32

C) -8

D) $8i$

Answer: D
Explanation: A)
B)
C)
D)

Solve.

85) $32 = 24 - \frac{8y}{7}$ 85) _____

A) -6

B) -8

C) -7

D) -9

Answer: C
Explanation: A)
B)
C)
D)

Express the compound inequality in interval notation.

86) $x < -3$ and $x \geq 2$ 86) _____

A) $(-\infty, -3] \cup (2, \infty)$ B) $(-3, 2]$

C) $[-3, 2)$ D) $(-\infty, -3) \cup [2, \infty)$

Answer: D

Explanation: A)
B)
C)
D)

Solve by completing the square. Write your answer in exact form.

87) $x^2 = 5x + 2$ 87) _____

A) $\frac{5}{4} \pm \frac{\sqrt{29}}{4}$ B) $\frac{5}{4} \pm \frac{\sqrt{29}}{2}$ C) $\frac{5}{2} \pm \frac{\sqrt{29}}{2}$ D) $\frac{5}{2} \pm \frac{\sqrt{33}}{2}$

Answer: D

Explanation: A)
B)
C)
D)

Determine the intersection or union of sets *A*, *B*, and *C* as indicated, given

***A* = {5, 10, 15, 20}**

***B* = {25, 30, 35, 40}**

***C* = {10, 20, 30, 40}.**

88) Find $A \cup B$. 88) _____

A) {10, 15} B) {5, 10, 35, 40}

C) {5, 10, 15, 20, 25, 30, 35, 40} D) { }

Answer: C

Explanation: A)
B)
C)
D)

The following equation is given in $ax + b = c$ form. Solve by identifying the values of *a*, *b*, and *c*, then using the formula $x = \frac{c - b}{a}$.

89) $6x - 8 = -56$ 89) _____

A) $a = 6$; $b = 8$; $c = -56$; $x = 8$ B) $a = 6$; $b = 8$; $c = -56$; $x = -8$

C) $a = 6$; $b = -8$; $c = -56$; $x = -8$ D) $a = 6$; $b = -8$; $c = -56$; $x = 8$

Answer: C

Explanation: A)
B)
C)
D)

Determine the allowable values for the expression. Write your answer in interval notation.

90) $\sqrt{y - 7}$ 90) _____

A) $y \in (-\infty, 7]$ B) $y \in [7, \infty)$

C) $y \in (-\infty, 7) \cup (7, \infty)$ D) $y \in (-7, \infty)$

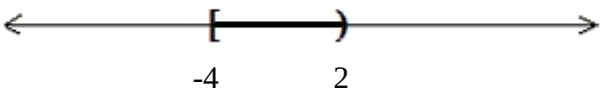
Answer: B

Explanation: A)
B)
C)
D)

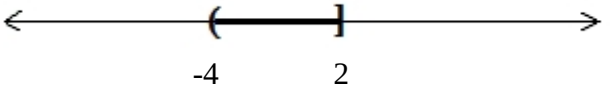
Express the compound inequality graphically.

91) $x < -4$ and $x \geq 2$ 91) _____

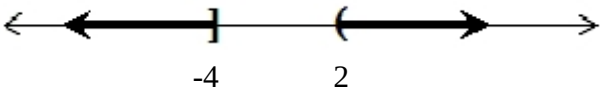
A)



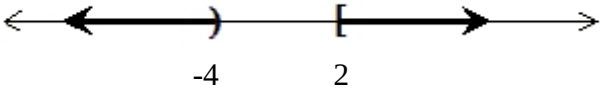
B)



C)



D)



Answer: D

Explanation: A)
B)
C)
D)

Express the compound inequality in interval notation.

92) $x > 9$ and $x < 3$ 92) _____

A) $(-\infty, 9) \cup (3, \infty)$ B) $(3, 9)$

C) $(-\infty, 9] \cup [3, \infty)$ D) no solution

Answer: D

Explanation: A)
B)
C)
D)

Determine whether the equation is quadratic. If so, identify the coefficients *a*, *b*, and *c*.

93) $9 = -6x^2$ 93) _____

A) $a = 6, b = 9, c = 0$ B) $a = 6, b = 0, c = 9$

C) $a = 0, b = 9, c = -6$ D) not quadratic

Answer: B
Explanation: A)
B)
C)
D)

Solve the problem.

94) The height h in feet of an object thrown upward from a height of 5 ft, with an initial velocity of 30 ft/sec, is given by the equation $h = -16t^2 + 30t + 5$, where h represents the height of the object after t seconds. How long will it take the object to hit the ground? Answer in decimal form rounded to the nearest thousandth. 94) _____

A) 3.149 seconds B) 2.029 seconds C) 2.329 seconds D) 1.829 seconds

Answer: B
Explanation: A)
B)
C)
D)

Solve. Simplify your results.

95) $x^2 = -5x - 12$ 95) _____

A) $\frac{-5 \pm i\sqrt{23}}{2}$ B) $-5 \pm \sqrt{13}$ C) $-5 \pm i\sqrt{23}$ D) $\frac{-5 \pm \sqrt{13}}{2}$

Answer: A
Explanation: A)
B)
C)
D)

Solve using the zero product property. Be sure the equation is in standard form and factor out any common factors before attempting to solve. Check all answers in the original equation.

96) $-5x^4 - 25x^3 = -70x^2$ 96) _____

A) $x = -7, x = -2, x = 0$ B) $x = 7, x = 2, x = 0$

C) $x = -7, x = 2, x = 0$ D) $x = 7, x = -2, x = 0$

Answer: C
Explanation: A)
B)
C)
D)

Identify the equation as an identity, a contradiction, or a conditional equation, then state the solution.

97) $2x + 10(-x - 7) = -54 - 4(2x + 3)$ 97) _____

A) Identity

B) Contradiction

C) Conditional; $x = -\frac{35}{8}$

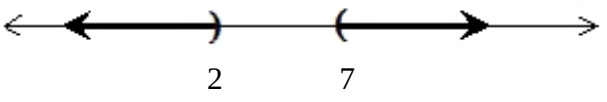
D) Conditional; $x = \frac{35}{8}$

Answer: B
Explanation: A)
B)
C)
D)

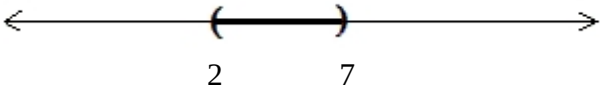
Express the compound inequality graphically.

98) $x > 7$ and $x < 2$ 98) _____

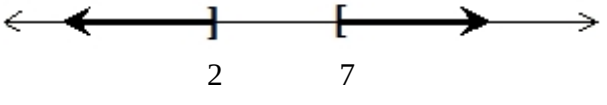
A)



B)



C)



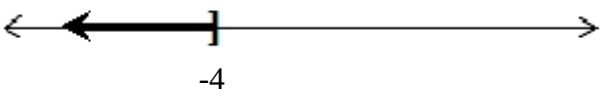
D) no solution

Answer: D
Explanation: A)
B)
C)
D)

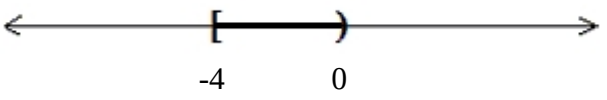
Solve the compound inequality and graph the solution set.

99) $-2x + 8 \leq 16$ and $2x < 0$ 99) _____

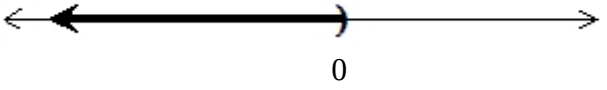
A)



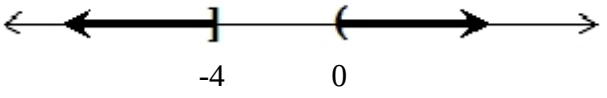
B)



C)



D)



Answer: B

Explanation: A)
B)
C)
D)

Solve using the zero product property. Be sure the equation is in standard form and factor out any common factors before attempting to solve. Check all answers in the original equation.

100) $-24x = x^3 + 10x^2$ 100) _____

A) $x = -6, x = 4, x = 0$

B) $x = 6, x = 4, x = 0$

C) $x = 6, x = -4, x = 0$

D) $x = -6, x = -4, x = 0$

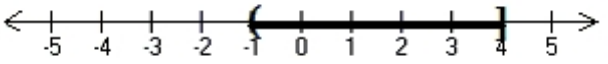
Answer: D

Explanation: A)
B)
C)
D)

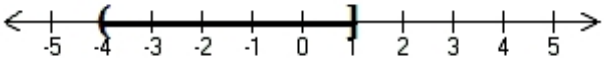
Graph the inequality on a number line.

101) $-4 \leq y < 1$ 101) _____

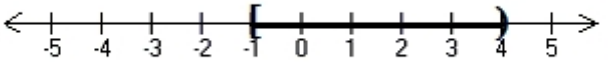
A)



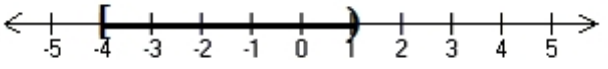
B)



C)



D)



Answer: D

Explanation: A)
B)
C)
D)

Express the compound inequality in interval notation.

102) $x \leq 5$ and $x > -1$ 102) _____

A) $[-1, 5)$ B) $(-1, 5]$

C) $(-\infty, -1] \cup (5, \infty)$ D) $(-\infty, -1) \cup [5, \infty)$

Answer: B

Explanation: A)
B)
C)
D)

Solve.

103) $5 - 4(3x - 2) = 2 + 3(2x - 5)$ 103) _____

A) $\frac{5}{9}$ B) $\frac{8}{9}$ C) $\frac{10}{9}$ D) $\frac{13}{9}$

Answer: D

Explanation: A)
B)
C)
D)

Simplify using the power of *i*.

104) i^{36} 104) _____

A) i B) 1 C) -1 D) $-i$

Answer: B
Explanation: A)
B)
C)
D)

Solve the problem.

105) At 9:00 a.m. a truck leaves the truck yard and travels west at a rate of 40 mph. At 11:00 a.m., a second truck leaves along the same route, traveling at 50 mph. When will the second truck catch up to the first? 105) _____

A) 7:00 p.m. B) 10:00 p.m. C) 8:00 p.m. D) 9:00 p.m.

Answer: A
Explanation: A)
B)
C)
D)

Perform the indicated operation. Write the result in *a* + *bi* form.

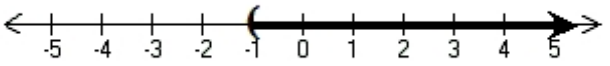
106) $(8 - 9i) - (-2 - 3i)$ 106) _____

A) $-2i$ B) $10 - 6i$ C) $10 - 12i$ D) $4i$

Answer: B
Explanation: A)
B)
C)
D)

Answer Key
Testname: C1

1)



2) Identity

3) $z = \frac{x - wy}{w}$

4) $n = 56$

5) 11 ft, 8 ft

6) $23 + 11i$

7) $(-\infty, 7) \cup (13, \infty)$

8) $x = -\frac{2}{5}$, $x = 3$, $x = 0$

9) $p = \frac{m}{nr}$

10) $x = -6$, $x = 0$

11) $\frac{3}{5} + \frac{\sqrt{2}}{2}i$; $a = \frac{3}{5}$, $b = \frac{\sqrt{2}}{2}$

12) -4

13) $i\sqrt{37}$

14) $x = 13$, $x = -7$

15) $-8 + 0i$; $a = -8$, $b = 0$

16) $y = -\frac{14}{9}x + \frac{40}{3}$

17) $n = -1$, $n = 5$

18) -5

19) $-\frac{1}{4} \pm \frac{\sqrt{13}}{4}$

20) $11 - 2i$

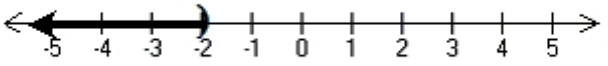
21) $x = 4$

22) 100; $(x - 10)^2$

23) 20 pounds, $3.30 per pound

24) $x = \pm 6\sqrt{2} \approx \pm 8.49$

25) $\{ y \mid y < -2\}$



$y \in (-\infty, -2)$

26) nonlinear; the variable is used as a divisor

27) $n \in (-\infty, 0) \cup (0, \infty)$

28) $a = -1$

29) $m \in (-\infty, 3) \cup (3, \infty)$

30) $x = -3, x = -1, x = 2, x = 4$

31) $x = \dfrac{1 \pm \sqrt{3}}{2}$

32) 300 mi

33) Identity

34) $\varnothing$

35) $-24 + 10i$

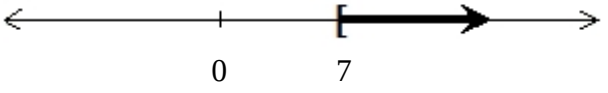
36) $x = \dfrac{2}{3}, x = -5$

37) $\dfrac{4}{5} \pm \dfrac{3}{5}i$

38) $x = 9$

39) $2\sqrt{6}$

40) $\{n \mid n \geq 7\}$

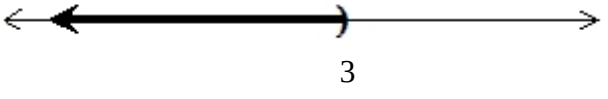


$n \in [7, \infty)$

41) $m = 16$

42) 2

43) $x < 3$



44) C

45) D

46) A

47) C

48) D

49) B

50) A

51) D

52) D
53) A
54) C
55) B
56) B
57) C
58) C
59) C
60) B
61) B
62) C
63) C
64) B
65) B
66) D
67) C
68) B
69) B
70) D
71) D
72) B
73) C
74) B
75) D
76) A
77) D
78) C
79) C
80) B
81) B
82) C
83) B
84) D
85) C
86) D
87) D
88) C
89) C
90) B
91) D
92) D
93) B
94) B
95) A
96) C
97) B
98) D
99) B
100) D
101) D

Answer Key
Testname: C1

102) B
103) D
104) B
105) A
106) B