Algebra and Trigonometry 4th edition Trigsted Test Bank

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

Determine whether the equation is linear or nonlinear.

1) $15x - \frac{1}{12} = 23$

A) linear
B) nonlinear

Answer: A

2) $\frac{2}{x} + 1 = 3$

A) linear
B) nonlinear

Answer: B

3) $\sqrt{2}x + 6 = 0$

A) linear
B) nonlinear

Answer: A

4) $x^2 - 4 = 9$

A) linear
B) nonlinear

Answer: B

5) $\frac{x - 6}{7x + 4} = 9$

A) linear
B) nonlinear

Answer: B

6) $0.14x + 7 = 0.22$

A) linear
B) nonlinear

Answer: A

Solve the equation.

7) $8x = 1 + 7x$

A) {2}
B) {1}
C) {- 1}
D) {8}

Answer: B

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8) $4x + 6 = 2x + 8$

A) {4}
B) {- 1}
C) {- 4}
D) {1}

Answer: D

9) $- 7x + 63 = 2x + 27$

A) {4}
B) {7}
C) {- 4}
D) {- 7}

Answer: A

10) $8 - 2x = 24 + 6x$

A) {- 2}
B) {- 1}
C) {1}
D) {2}

Answer: A

11) $6x - (4x - 1) = 2$

A) $\left\{\frac{1}{10}\right\}$
B) $\left\{\frac{1}{2}\right\}$
C) $\left\{-\frac{1}{2}\right\}$
D) $\left\{-\frac{1}{10}\right\}$

Answer: B

12) $2(x + 6) = 3(x - 5)$

A) {27}
B) {- 3}
C) {- 27}
D) {3}

Answer: A

13) $4(2x - 4) = 7(x + 3)$

A) {37}
B) {- 37}
C) {9}
D) {- 5}

Answer: A

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14) $3x - 5 - 1 = 4(x - 3)$

A) {6}
B) {3}
C) {- 6}
D) {- 8}

Answer: A

15) $-4x - 6 + 4(x + 1) = 6x + 1$

A) $\left\{-\frac{1}{2}\right\}$
B) $\left\{\frac{3}{4}\right\}$
C) {6}
D) $\left\{-\frac{9}{10}\right\}$

Answer: A

16) $\frac{2}{5}x = 4 + \frac{1}{3}x$

A) {120}
B) {- 120}
C) {60}
D) {- 60}

Answer: C

17) $\frac{1}{3}x + 4 = \frac{1}{2}x + 2$

A) {- 12}
B) {12}
C) $\left\{\frac{1}{3}\right\}$
D) $\left\{-\frac{1}{3}\right\}$

Answer: B

18) $\frac{7x + 6}{4} + 1 = -\frac{5x}{3}$

A) {- 30}
B) $\left\{-\frac{30}{41}\right\}$
C) $\left\{-\frac{6}{41}\right\}$
D) $\left\{\frac{6}{41}\right\}$

Answer: B

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19) $-11.6x + 1.2 = -27.9 - 1.9x$

A) {- 39}
B) {3}
C) {2.5}
D) {2.7}

Answer: B

20) $-0.50(20) + 0.70x = 0.30(20 + x)$

A) {30}
B) {50}
C) {20}
D) {40}

Answer: D

21) $0.80x - 0.40(50 + x) = 0.08(50)$

A) {60}
B) {30}
C) {70}
D) {50}

Answer: A

Determine whether the given equation is rational or non-rational.

22) $4 = \frac{7}{x^5}$

A) Rational
B) Non- rational

Answer: A

23) $\frac{7x - 5}{4} = x^5$

A) Rational
B) Non- rational

Answer: B

Determine if the statement is a rational equation.

24) $\frac{\sqrt{x^3 + 3x}}{x - 6} = \frac{3x - 1}{x^2 + 2}$

A) Yes
B) No

Answer: B

Determine whether the given equation is rational or non-rational.

25) $2x + 7 = \frac{9x^2 + 4x + 3}{x^3 + \sqrt{7}x^2 - 4x} + 2$

A) Rational
B) Non- rational

Answer: A

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Solve the equation.

26) $\frac{x}{x - 10} - 5 = \frac{10}{x - 10}$

A) {10, - 10}
B) no solution
C) {- 10}
D) {10}

Answer: B

27) $\frac{2x}{x^2 - 1} = \frac{3}{x^2 - 1} - \frac{4}{x + 1}$

A) $\left\{\frac{1}{2}\right\}$
B) $\left\{-\frac{1}{8}\right\}$
C) $\left\{-\frac{1}{6}\right\}$
D) $\left\{\frac{7}{6}\right\}$

Answer: D

Solve the rational equation.

28) $\frac{19x}{x^2 + 5x - 6} + \frac{1}{x + 6} = \frac{5}{x - 1}$

A) $\frac{31}{25}$

B) $\frac{31}{15}$

C) $\frac{29}{13}$

D) $\frac{29}{15}$

Answer: B

Solve the equation.

29) $\frac{8}{x + 2} - \frac{4}{x - 2} = \frac{8}{x^2 - 4}$

A) {8}
B) {- 8}
C) {32}
D) $\{2\sqrt{7}\}$

Answer: A

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30) $\frac{-1}{x-4} = \frac{-6}{x-8} - \frac{-4}{x^2-12x+32}$

A) no solution
B) {8}
C) {4}
D) {4, 8}

Answer: A

Solve the rational equation.

31) $4 = \frac{4x}{x+3} + \frac{12x^2+5x}{x^3+27}$

A) $\frac{2.53327479e+15}{7.24798065e+15}$

B) $\frac{7.599824371e+15}{2.18143107e+15}$

C) $\frac{7.599824371e+15}{2.885118511e+15}$

D) $\frac{2.53327479e+15}{7.951668092e+15}$

Answer: C

Write the sentence as an equation. Let the variable x represent the number.

32) The sum of twice a number and 9 is 25.

A) $2x - 9 = 25$
B) $18x = 25$
C) $2x + 9 = 25$
D) $x + 18 = 25$

Answer: C

33) Four less than 3 times a number equals 11.

A) $x - 12 = 11$
B) $3x - 4 = 11$
C) $\frac{3x}{4} = 11$
D) $4 - 3x = 11$

Answer: B

34) The product of 6 and a number, increased by 5, is 17.

A) $6x - 5 = 17$
B) $30x = 17$
C) $6(x + 5) = 17$
D) $6x + 5 = 17$

Answer: D

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35) The product of 3 and a number increased by 4 is 18.
A) $3x + 4 = 18$
B) $12x = 18$
C) $3x - 4 = 18$
D) $3(x + 4) = 18$

Answer: D

36) Five times a number is equal to 24 decreased by the number.
A) $5x = 24 + x$
B) $5 + x = 24 - x$
C) $5x = x - 24$
D) $5x = 24 - x$

Answer: D

Solve the problem.

37) Mary and her brother John collect foreign coins. Mary has twice the number of coins that John has. Together they have 105 foreign coins. Find how many coins Mary has.
A) 14 coins
B) 63 coins
C) 35 coins
D) 70 coins

Answer: D

38) Center City East Parking Garage has a capacity of 251 cars more than Center City West Parking Garage. If the combined capacity for the two garages is 1,221 cars, find the capacity for each garage.
A) Center City East: 736 cars
Center City West: 485 cars
B) Center City East: 475 cars
Center City West: 746 cars
C) Center City East: 485 cars
Center City West: 736 cars
D) Center City East: 746 cars
Center City West: 475 cars

Answer: A

39) During an intramural basketball game, Team A scored 13 fewer points than Team B. Together, both teams scored a total of 149 points. How many points did Team A score during the game?
A) 68 points
B) 69 points
C) 74 points
D) 81 points

Answer: A

40) A rectangular carpet has a perimeter of 232 inches. The length of the carpet is 76 inches more than the width. What are the dimensions of the carpet?
A) 68 by 88 in.
B) 96 by 116 in.
C) 106 by 116 in.
D) 96 by 20 in.

Answer: D

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Use the problem-solving strategy for applications of linear equations to solve the application problem.

41) A rectangle's length is twice its width and its perimeter is 204 m. Find its dimensions.
A) 102 m by 34 m
B) 204 m by 102 m
C) 34 m by 17 m
D) 68 m by 34 m

Answer: D

Solve the problem algebraically. Clearly define all variables, write an appropriate equaion, and solve.

42) One length of a rectangular parking lot lies along the wall of a building. However, the rest of the parking lot is enclosed by 90 feet of shrubs. If the length of the parking lot is three times the width, what is the area of the parking lot?
A) 972 feet
B) 144 feet
C) 4,860 feet
D) 90 feet

Answer: A

43) A triangular- shaped stained glass window has two sides that are each 54 inches shorter than four times the length of the shortest side. If the perimeter of the window is 216 inches, what are the lengths of the three sides?
A) 36 inches, 126 inches, 126 inches
B) 36 inches, 90 inches, 90 inches
C) 36 inches, 144 inches, 144 inches
D) 36 inches, 54 inches, 54 inches

Answer: B

Solve the problem.

44) Don James wants to invest $56,000 to earn $5,900 per year. He can invest in B- rated bonds paying 13% per year or in a Certificate of Deposit (CD) paying 7% per year. How much money should be invested in each to realize exactly $5,900 in interest per year?
A) $23,000 in B- rated bonds and $33,000 in a CD
B) $22,000 in B- rated bonds and $34,000 in a CD
C) $33,000 in B- rated bonds and $23,000 in a CD
D) $34,000 in B- rated bonds and $22,000 in a CD

Answer: C

45) A bank loaned out $61,000, part of it at the rate of 11% per year and the rest at a rate of 8% per year. If the interest received was $5,690, how much was loaned at 11%?
A) $34,000
B) $28,000
C) $33,000
D) $27,000

Answer: D

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46) A college student earned $5,700 during summer vacation working as a waiter in a popular restaurant. The student invested part of the money at 10% and the rest at 6%. If the student received a total of $442 in interest at the end of the year, how much was invested at 10%?

A) $950
B) $2,850
C) $3,200
D) $2,500

Answer: D

47) Kevin invested part of his $10,000 bonus in a certificate of deposit that paid 6% annual simple interest, and the remainder in a mutual fund that paid 11% annual simple interest. If his total interest for that year was $700, how much did Kevin invest in the mutual fund?

A) $1,000
B) $3,000
C) $8,000
D) $2,000

Answer: D

48) The manager of a coffee shop has one type of coffee that sells for $7 per pound and another type that sells for $11 per pound. The manager wishes to mix 30 pounds of the $11 coffee to get a mixture that will sell for $8 per pound. How many pounds of the $7 coffee should be used?

A) 45 lb
B) 90 lb
C) 120 lb
D) 60 lb

Answer: B

49) The owners of a candy store want to sell, for $6 per pound, a mixture of chocolate- covered raisins, which usually sells for $3 per pound, and chocolate- covered macadamia nuts, which usually sells for $8 per pound. They have a 70- pound barrel of the raisins. How many pounds of the nuts should they mix with the barrel of raisins so that they hit their target value of $6 per pound for the mixture?

A) 91 lb
B) 98 lb
C) 112 lb
D) 105 lb

Answer: D

50) The manager of a candy shop sells chocolate covered peanuts for $5 per pound and chocolate covered cashews for $10 per pound. The manager wishes to mix 60 pounds of the cashews to get a cashew- peanut mixture that will sell for $9 per pound. How many pounds of peanuts should be used?

A) 37.5 lb
B) 75 lb
C) 15 lb
D) 7.5 lb

Answer: C

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51) A chemist needs 210 milliliters of a 69% solution but has only 51% and 93% solutions available. Find how many milliliters of each that should be mixed to get the desired solution.
A) 120 mL of 51%; 90 mL of 93%
B) 130 mL of 51%; 80 mL of 93%
C) 80 mL of 51%; 130 mL of 93%
D) 90 mL of 51%; 120 mL of 93%

Answer: A

52) How much pure acid should be mixed with 7 gallons of a 50% acid solution in order to get an 80% acid solution?
A) 10.5 gal
B) 17.5 gal
C) 28 gal
D) 3.5 gal

Answer: A

53) An airplane flies 410 miles with the wind and 330 against the wind in the same length of time. If the speed of the wind is 30, what is the speed of the airplane in still air?
A) 123.75 mph
B) 277.5 mph
C) 267.5 mph
D) 282.5 mph

Answer: B

54) Two friends decide to meet in Chicago to attend a Cub's baseball game. Rob travels 102 miles in the same time that Carl travels 92 miles. Rob's trip uses more interstate highways and he can average 5 mph more than Carl. What is Rob's average speed?
A) 51 mph
B) 53 mph
C) 49 mph
D) 46 mph

Answer: A

55) Two cars start from the same point and travel in the same direction. If one car is traveling 64 miles per hour and the other car is traveling at 45 miles per hour, how far apart will they be after 1.8 hours?
A) 34.2 mi
B) 115.2 mi
C) 81 mi
D) 196.2 mi

Answer: A

56) Two trains leave a train station at the same time. One travels east at 8 miles per hour. The other train travels west at 12 miles per hour. In how many hours will the two trains be 52 miles apart?
A) 2.6 hr
B) 1.3 hr
C) 5.2 hr
D) 3.1 hr

Answer: A

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57) During a hurricane evacuation from the east coast of Georgia, a family traveled 210 miles west. For part of the trip, they averaged 70 mph, but as the congestion got bad, they had to slow to 30 mph. If the total time of travel was 9 hours, how many miles did they drive at the reduced speed?

A) 320 mi
B) 315 mi
C) 325 mi
D) 310 mi

Answer: B

58) 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?

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

Answer: A

59) BJ can overhaul a boat's diesel inboard engine in 30 hours. His apprentice takes 60 hours to do the same job. How long would it take them working together assuming no gain or loss in efficiency?

A) 90 hr
B) 8 hr
C) 20 hr
D) 12 hr

Answer: C

60) Tracy can wallpaper 4 rooms in a new house in 20 hours. Together with her trainee they can wallpaper the 4 rooms in 13 hours. How long would it take the trainee working by herself to do the job?

A) 72 hr
B) 56 hr
C) 36 hr
D) 20 hr

Answer: C

Write the power of i as i, -1, -i, or 1.

61) i^{16}

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

Answer: C

62) i^{7}

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

Answer: D

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63) i^5

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

Answer: A

64) i^{10}

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

Answer: C

Write the expression in the standard form a + bi.

65) (7 - 2i) + (9 + 8i)

A) 16 + 6i
B) - 2 + 10i
C) 16 - 6i
D) - 16 - 6i

Answer: A

66) (7 + 8i) - (- 8 + i)

A) - 15 - 7i
B) 15 + 7i
C) 15 - 7i
D) - 1 + 9i

Answer: B

67) 9i + (- 2 - i)

A) 2 - 10i
B) 2 - 8i
C) - 2 + 8i
D) - 2 + 10i

Answer: C

68) 7i - (- 6 - i)

A) 6 + 8i
B) - 6 - 8i
C) - 6 + 6i
D) 6 - 6i

Answer: A

Perform the desired operation. Write the answer in the form a + bi.

69) 2(8 - 2i)

A) 8 - 4i
B) 16i - 2i
C) 16 + 4i
D) 16 - 4i

Answer: D

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70) $2i(8 - 9i)$

A) $18 + 16i$

B) $16i - 18i^2$

C) $16i - 18$

D) $16i + 18i^2$

Answer: A

71) $-6i(-6 + 4i)$

A) $36i + 24i^2$

B) $36i - 24i^2$

C) $24 + 36i$

D) $-24 + 36i$

Answer: C

72) $(-3 - 8i)(2 + i)$

A) $2 - 19i$

B) $2 + 13i$

C) $-14 - 19i$

D) $-14 + 13i$

Answer: A

73) $(3 + 4i)(2 + 6i)$

A) $24i^2 + 26i + 6$

B) $-18 - 26i$

C) $-18 + 26i$

D) $30 - 10i$

Answer: C

74) $(5 + 3i)(4 - 3i)$

A) $11 + 27i$

B) $-9i^2 - 3i + 20$

C) $29 - 3i$

D) $29 + 3i$

Answer: C

75) $(7 + 6i)(7 - 6i)$

A) $49 - 36i^2$

B) 85

C) $49 - 36i$

D) 13

Answer: B

76) $(-6 + i)(-6 - i)$

A) -35

B) 36

C) -6

D) 37

Answer: D

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77) $(3 + 9i)(3 - 9i)$

A) 90

B) $9 - 81i$

C) $9 - 81i^2$

D) -72

Answer: A

78) $(9 - 8i)^2$

A) $81 - 144i + 64i^2$

B) $145 - 144i$

C) $17 - 144i$

D) 17

Answer: C

Find the product of the given complex number and its conjugate. Write the answer in the form a + bi.

79) $\frac{1}{4} - 2i$

A) $\frac{1}{16} + 4i$

B) $\frac{65}{16}$

C) $\frac{9}{4}$

D) $\frac{1}{16} - 4i$

Answer: B

80) $\sqrt{11} + 2i$

A) $11 + 4i$

B) 15

C) 9

D) $11 - 4i$

Answer: B

81) $\frac{\sqrt{3}}{5} + \frac{3}{5}i$

A) $\frac{4.222124651e+14}{3.518437209e+15} - \frac{1.266637395e+15}{3.518437209e+15}i$

B) $\frac{6}{5}$

C) $\frac{4.222124651e+14}{3.518437209e+15} + \frac{1.266637395e+15}{3.518437209e+15}i$

D) $\frac{1.68884986e+15}{3.518437209e+15}$

Answer: D

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Write the expression in the standard form a + bi.

82) $\frac{8}{8+i}$

A) $\frac{64}{63}+\frac{8}{63}i$

B) $\frac{64}{65}-\frac{8}{65}i$

C) $\frac{64}{63}-\frac{8}{63}i$

D) $\frac{64}{65}+\frac{8}{65}i$

Answer: B

83) $\frac{2}{4-i}$

A) $\frac{8}{15}-\frac{2}{15}i$

B) $\frac{8}{17}-\frac{2}{17}i$

C) $\frac{8}{15}+\frac{2}{15}i$

D) $\frac{8}{17}+\frac{2}{17}i$

Answer: D

84) $\frac{7}{5-3i}$

A) $\frac{35}{16}+\frac{21}{16}i$

B) $\frac{35}{16}-\frac{21}{16}i$

C) $\frac{35}{34}+\frac{21}{34}i$

D) $\frac{35}{34}-\frac{21}{34}i$

Answer: C

85) $\frac{2i}{1-i}$

A) $-1+i$

B) $-1+2i$

C) $1+i$

D) $-1-i$

Answer: A

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86) $\frac{4 - 5i}{5 + 4i}$

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

Answer: C

87) $\frac{32 - 22i}{2 - 5i}$

A) 6 + 4i
B) 4 + 6i
C) 6 - 4i
D) 4 - 6i

Answer: A

88) $\frac{8 + 4i}{5 - 7i}$

A) $-\frac{17}{6} + \frac{19}{12}i$

B) $\frac{68}{37} + \frac{36}{37}i$

C) $-\frac{1}{4} + \frac{19}{12}i$

D) $\frac{6}{37} + \frac{38}{37}i$

Answer: D

Perform the indicated operations and write the result in standard form.

89) $\sqrt{-16} + \sqrt{-64}$

A) 32i
B) - 12
C) - 12i
D) 12i

Answer: D

90) $\sqrt{-2} - \sqrt{-144}$

A) $\sqrt{2}i - 12$
B) $\sqrt{2i} - 12i$
C) $i(\sqrt{2} + 12)$
D) $i(\sqrt{2} - 12)$

Answer: D

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91) $\sqrt{-9} \cdot \sqrt{-9}$

A) 9

B) $9i^2$

C) -9

D) $-9i$

Answer: C

92) $\dfrac{-8+\sqrt{-12}}{2}$

A) $-4+i\sqrt{3}$

B) $-4-i\sqrt{3}$

C) $-4+i\sqrt{2}$

D) $4+i\sqrt{3}$

Answer: A

93) $\dfrac{-21-\sqrt{-54}}{3}$

A) $7+i\sqrt{6}$

B) $-7-i\sqrt{6}$

C) $-7+i\sqrt{6}$

D) $-7-i\sqrt{3}$

Answer: B

Solve the equation by factoring.

94) $x^2+7x=0$

A) {0, 7}

B) {7}

C) {- 7}

D) {0, - 7}

Answer: D

95) $14x^2-8x=0$

A) $\left\{\dfrac{4}{7}, 0\right\}$

B) {0}

C) $\left\{-\dfrac{4}{7}, 0\right\}$

D) $\left\{\dfrac{4}{7}, -\dfrac{4}{7}\right\}$

Answer: A

96) $x^2+x-12=0$

A) {3, 4}

B) {- 4, 3}

C) {- 3, 4}

D) {- 4, - 3}

Answer: B

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97) $x^2 + 30 = 11x$

A) $\{-6, 5\}$

B) $\{6, 5\}$

C) $\{6, -5\}$

D) $\{-6, -5\}$

Answer: B

98) $x^2 - 6x - 27 = 0$

A) $\{3, 9\}$

B) $\{-3, -9\}$

C) $\{3, -9\}$

D) $\{-3, 9\}$

Answer: D

99) $3x^2 + 8x = 3$

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

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

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

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

Answer: D

Solve the equation using the square root property.

100) $x^2 - 4 = 0$

A) $\{4\}$

B) $\{-2\}$

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

D) $\{2\}$

Answer: C

101) $(x - 3)^2 = 49$

A) $\{52\}$

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

C) $\{7, -7\}$

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

Answer: D

102) $(x + 7)^2 - 4 = 0$

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

B) $\{-5\}$

C) $\{-9, -5\}$

D) $\{-9\}$

Answer: C

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103) $(2x - 3)^2 - 49 = 0$

A) {2, - 5}
B) {4, - 10}
C) {10, - 4}
D) {5, - 2}

Answer: D

104) $(2x + 2)^2 = 16$

A) {- 3, 1}
B) {1, 3}
C) {0, 1}
D) {- 9, 9}

Answer: A

Decide what number must be added to the binomial to make a perfect square trinomial.

105) $x^2 + 18x$

A) 81
B) 9
C) 41
D) 162

Answer: A

106) $x^2 - 16x$

A) 32
B) 64
C) - 8
D) 128

Answer: B

107) $x^2 + \frac{2}{5}x$

A) $\frac{4}{25}$

B) $\frac{2}{25}$

C) $\frac{1}{25}$

D) $\frac{1}{5}$

Answer: C

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108) $x^2 - \frac{3}{4}x$

A) $-\frac{1}{4}$

B) $\frac{9}{16}$

C) $\frac{9}{64}$

D) $-\frac{9}{32}$

Answer: C

Solve the equation by completing the square.

109) $x^2 + 4x - 3 = 0$

A) $\{-1 - \sqrt{7}, -1 + \sqrt{7}\}$

B) $\{2 + \sqrt{7}\}$

C) $\{-2 - \sqrt{7}, -2 + \sqrt{7}\}$

D) $\{-2 - 1\sqrt{7}, -2 + 1\sqrt{7}\}$

Answer: C

110) $x^2 + 16x + 43 = 0$

A) $\{-16 + \sqrt{43}\}$

B) $\{8 + \sqrt{21}\}$

C) $\{8 - \sqrt{43}, 8 + \sqrt{43}\}$

D) $\{-8 - \sqrt{21}, -8 + \sqrt{21}\}$

Answer: D

111) $x^2 - 4x - 7 = 0$

A) $\{2 - \sqrt{7}, 2 + \sqrt{7}\}$

B) $\{4 - \sqrt{23}, 4 + \sqrt{23}\}$

C) $\{2 - \sqrt{11}, 2 + \sqrt{11}\}$

D) $\{-2 - \sqrt{11}, -2 + \sqrt{11}\}$

Answer: C

112) $x^2 + 5x - 5 = 0$

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

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

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

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

Answer: A

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113) $25x^2 + 60x + 27 = 0$

A) $\left\{\frac{3}{5}, \frac{9}{5}\right\}$

B) $\left\{-\frac{3}{25}, -\frac{9}{25}\right\}$

C) $\left\{-\frac{3}{5}, -\frac{9}{5}\right\}$

D) $\left\{-\frac{9}{25}, \frac{36}{25}\right\}$

Answer: C

114) $5x^2 - 2x - 5 = 0$

A) $\left\{\frac{-1-\sqrt{26}}{5}, \frac{-1+\sqrt{26}}{5}\right\}$

B) $\left\{\frac{1-\sqrt{26}}{5}, \frac{1+\sqrt{26}}{5}\right\}$

C) $\left\{\frac{5-\sqrt{26}}{25}, \frac{5+\sqrt{26}}{25}\right\}$

D) $\left\{-5, \frac{27}{5}\right\}$

Answer: B

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

115) $x^2 + 8x - 3 = 0$

A) $\{-1-\sqrt{19}, -1+\sqrt{19}\}$

B) $\{-4-1\sqrt{19}, -4+1\sqrt{19}\}$

C) $\{-4-\sqrt{19}, -4+\sqrt{19}\}$

D) $\{4+\sqrt{19}\}$

Answer: C

116) $x^2 - 12x - 7 = 0$

A) $\{-6+\sqrt{43}, -6-\sqrt{43}\}$

B) $\{6+\sqrt{7}, 6-\sqrt{7}\}$

C) $\{6+\sqrt{43}, 6-\sqrt{43}\}$

D) $\{12+\sqrt{43}, 12-\sqrt{43}\}$

Answer: C

117) $x^2 + x + 1 = 0$

A) no real solution

B) $\left\{\frac{-1-\sqrt{3}}{2}, \frac{-1+\sqrt{3}}{2}\right\}$

C) $\left\{\frac{-1-\sqrt{3}}{2}, \frac{1+\sqrt{3}}{2}\right\}$

D) $\left\{\frac{1-\sqrt{3}}{2}, \frac{1+\sqrt{3}}{2}\right\}$

Answer: A

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118) $4x^2 + 15x - 25 = 0$

A) $\left\{-\frac{5}{4}, 5\right\}$

B) $\left\{-\frac{5}{4}, -5\right\}$

C) $\left\{\frac{5}{4}, 5\right\}$

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

Answer: D

119) $8x^2 - x + 1 = 0$

A) $\left\{\frac{-1-\sqrt{33}}{16}, \frac{1+\sqrt{33}}{16}\right\}$

B) $\left\{\frac{-1+\sqrt{33}}{16}, \frac{1+\sqrt{33}}{16}\right\}$

C) $\left\{\frac{-1-\sqrt{33}}{16}, \frac{-1+\sqrt{33}}{16}\right\}$

D) no real solution

Answer: D

120) $x^2 + 7x + 5 = 0$

A) $\left\{\frac{-7-\sqrt{29}}{2}, \frac{-7+\sqrt{29}}{2}\right\}$

B) $\left\{\frac{-7-\sqrt{69}}{2}, \frac{-7+\sqrt{69}}{2}\right\}$

C) $\left\{\frac{7-\sqrt{29}}{2}, \frac{7+\sqrt{29}}{2}\right\}$

D) $\left\{\frac{-7-\sqrt{29}}{14}, \frac{-7+\sqrt{29}}{14}\right\}$

Answer: A

121) $4x^2 + x - 6 = 0$

A) $\left\{\frac{1-\sqrt{97}}{8}, \frac{1+\sqrt{97}}{8}\right\}$

B) $\left\{\frac{-1-\sqrt{97}}{2}, \frac{-1+\sqrt{97}}{2}\right\}$

C) $\left\{\frac{-1-\sqrt{97}}{8}, \frac{-1+\sqrt{97}}{8}\right\}$

D) no real solution

Answer: C

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122) $4x^2 + 10x + 2 = 0$

A) $\left\{\frac{-5-\sqrt{17}}{4}, \frac{-5+\sqrt{17}}{4}\right\}$

B) $\left\{\frac{-5-\sqrt{33}}{4}, \frac{-5+\sqrt{33}}{4}\right\}$

C) $\left\{\frac{-10-\sqrt{17}}{4}, \frac{-10+\sqrt{17}}{4}\right\}$

D) $\left\{\frac{-5-\sqrt{17}}{8}, \frac{-5+\sqrt{17}}{8}\right\}$

Answer: A

123) $9x^2 - 42x + 49 = 0$

A) $\left\{-\frac{7}{3}\right\}$

B) no real solution

C) $\left\{\frac{7}{3}, -21\right\}$

D) $\left\{\frac{7}{3}\right\}$

Answer: D

Use the discriminant to determine the number and nature of the solutions to the quadratic equation. Do not solve the equation.

124) $x^2 - 5x + 4 = 0$

A) two nonreal solutions

B) two real solutions

C) exactly one real solution

Answer: B

125) $x^2 - 4x + 4 = 0$

A) two real solutions

B) exactly one real solution

C) two nonreal solutions

Answer: B

126) $x^2 + 3x + 7 = 0$

A) two real solutions

B) two nonreal solutions

C) exactly one real solution

Answer: B

127) $4x^2 - 5x + 7 = 0$

A) exactly one real solution

B) two nonreal solutions

C) two real solutions

Answer: B

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128) $6x^2 + 8x - 1 = 0$

A) exactly one real solution
B) two nonreal solutions
C) two real solutions

Answer: C

Solve the problem.

129) The square of the difference between a number and 6 is 49. Find the number(s).

A) 85
B) 29, 43
C) - 1, 13
D) 13

Answer: C

130) The product of 6 and the square of a number is 54. Find the number(s).

A) - 3, 3
B) $-3\sqrt{6}, 3\sqrt{6}$
C) $3\sqrt{6}$
D) 3

Answer: A

131) A ball is thrown vertically upward from the top of a building 112 feet tall with an initial velocity of 96 feet per second. The distance s (in feet) of the ball from the ground after t seconds is $s = 112 + 96t - 16t^2$. After how many seconds does the ball strike the ground?

A) 7 sec
B) 6 sec
C) 9 sec
D) 113 sec

Answer: A

132) As part of a physics experiment, Ming drops a baseball from the top of a 340- foot building. To the nearest tenth of a second, for how many seconds will the baseball fall? (Hint: Use the formula $h = 16t^2$, which gives the distance h, in feet, that a free- falling object travels in t seconds.)

A) 4.6 sec
B) 21.3 sec
C) 85 sec
D) 1.2 sec

Answer: A

133) The length of a vegetable garden is 5 feet longer than its width. If the area of the garden is 150 square feet, find its dimensions.

A) 9 ft by 14 ft
B) 10 ft by 15 ft
C) 9 ft by 16 ft
D) 11 ft by 16 ft

Answer: B

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134) Find the dimensions of a rectangle whose perimeter is 50 meters and whose area is 150 square meters.
A) 9 m by 16 m
B) 10 m by 15 m
C) 11 m by 14 m
D) 9 m by 14 m

Answer: B

135) Janet is training for a triathlon. Yesterday she jogged for 12 miles and then cycled another 45.5 miles. Her speed while cycling was 6 miles per hour faster than while jogging. If the total time for jogging and cycling was 4.75 hours, at what rate did she cycle?
A) 13 miles per hour
B) 16 miles per hour
C) 15 miles per hour
D) 14 miles per hour

Answer: D

136) George and Matt have a painting business. George has less experience and it takes him 4 hours more to paint a medium sized room than it takes Matt. Working together they can paint a medium sized room in 6 hours. How long does it take each of them working individually? Round to the nearest tenth of an hour.
A) George: 13.5 hours, Matt: 9.5 hours
B) George: 14.9 hours, Matt: 10.9 hours
C) George: 16.0 hours, Matt: 12.0 hours
D) George: 14.3 hours, Matt: 10.3 hours

Answer: D

Find all solutions.

137) $x^3 - 144x = 0$
A) {0, - 12}
B) {0, 12}
C) {0, 12, - 12}
D) {0, 144}

Answer: C

138) $x^3 + 4x^2 - 4x - 16 = 0$
A) {- 2, 2, - 4}
B) {2, - 4}
C) {4, - 4}
D) {- 2, 2, 4}

Answer: A

139) $x^3 + 2x^2 + 36x + 72 = 0$
A) {- 6, 6, - 2}
B) {- 2}
C) {2}
D) no real solution

Answer: B

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140) $x^3 + 7x^2 + 12x = 0$

A) {0, - 3, - 4}
B) {3, 4}
C) {- 3, - 4}
D) {0, 3, 4}

Answer: A

141) $x^3 + 2x^2 - x - 2 = 0$

A) {- 2, 2}
B) {4}
C) {1, - 2, 2}
D) {- 1, 1, - 2}

Answer: D

142) $8x^3 + 64x^2 + 120x = 0$

A) $\left\{-\frac{1}{5}, -3\right\}$
B) {0, - 5, - 3}
C) {- 5, - 3}
D) {0, 5, 3}

Answer: B

Solve the equation after making an appropriate substitution.

143) $x^4 - 50x^2 + 49 = 0$

A) {- 50, 50}
B) {- 7, 7}
C) {- 1, 1, - 7, 7}
D) {- 49, 49}

Answer: C

144) $x^6 - 7x^3 - 8 = 0$

A) {2}
B) {2, - 1}
C) {8}
D) {- 2, 1}

Answer: B

145) $4(x + 1)^2 + 21(x + 1) + 5 = 0$

A) $\left\{-\frac{5}{4}, -5\right\}$
B) $\left\{-\frac{5}{4}, -6\right\}$
C) $\left\{-\frac{1}{4}, -6\right\}$
D) $\{0, 4\}$

Answer: B

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146) $(4x - 7)^2 + 2(4x - 7) - 24 = 0$

A) $\left\{-\frac{11}{4}, -\frac{1}{4}\right\}$

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

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

D) $\left\{\frac{11}{4}, \frac{1}{4}\right\}$

Answer: D

147) $x + \sqrt{x} = 72$

A) {8}

B) {64}

C) {81}

D) {9}

Answer: B

148) $x^{1/2} - 8x^{1/4} + 15 = 0$

A) {81, 625}

B) {3, 5}

C) {- 3, - 5}

D) {9, 25}

Answer: A

149) $5x^{-2} - 17x^{-1} - 12 = 0$

A) $\left\{-\frac{3}{5}, 4\right\}$

B) $\left\{\frac{5}{3}, \frac{1}{4}\right\}$

C) $\left\{-\frac{5}{3}, \frac{1}{4}\right\}$

D) $\left\{-\frac{3}{5}, -4\right\}$

Answer: C

150) $x^{2/3} - 5x^{1/3} + 4 = 0$

A) {1, 4}

B) {- 64, - 1}

C) {- 4, - 1}

D) {1, 64}

Answer: D

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151) $x^{2/3} - 3x^{1/3} - 4 = 0$

A) {- 1, 4}

B) {- 1, 64}

C) {- 64, 1}

D) {- 4, 1}

Answer: B

Solve the radical equation.

152) $\sqrt{x + 5} = 5$

A) {20}

B) {30}

C) {25}

D) {100}

Answer: A

153) $\sqrt{3x - 2} = 2$

A) {4}

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

C) $\left\{\frac{2}{3}\right\}$

D) {2}

Answer: D

154) $\sqrt{8x + 9} = 9$

A) $\left\{\frac{81}{8}\right\}$

B) {9}

C) {81}

D) $\left\{\frac{45}{4}\right\}$

Answer: B

155) $\sqrt[3]{5x + 4} = - 2$

A) $\left\{- \frac{12}{5}\right\}$

B) $\left\{- \frac{13}{5}\right\}$

C) {0}

D) $\left\{- \frac{8}{5}\right\}$

Answer: A

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156) $\sqrt{10x + 24} = x$

A) $\{-2, 12\}$

B) $\left\{-\frac{8}{3}\right\}$

C) $\{12\}$

D) no real solution

Answer: C

157) $\sqrt{28x - 29} = x + 6$

A) $\{-8\}$

B) $\{-7\}$

C) $\{7\}$

D) $\{8\}$

Answer: D

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

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

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

C) $\{3\}$

D) no real solution

Answer: B

159) $\sqrt{2x + 5} - \sqrt{x - 2} = 3$

A) $\{2\}$

B) $\{-2\}$

C) $\{3, 8\}$

D) $\{2, 38\}$

Answer: D

160) $\sqrt{3x + 10} - \sqrt{x + 2} = 2$

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

B) $\{-2\}$

C) $\{-3\}$

D) $\{2\}$

Answer: A

Solve the linear inequality. Express the solution in set-builder notation.

161) $3x + 4 < 22$

A) $\{x \mid x > 6\}$

B) $\{x \mid x \leq 6\}$

C) $\{x \mid x < 6\}$

D) $\{x \mid x \geq 6\}$

Answer: C

162) $-3x + 9 > -4x + 4$

A) $\{x \mid x < 13\}$

B) $\{x \mid x > 13\}$

C) $\{x \mid x > -5\}$

D) $\{x \mid x < -5\}$

Answer: C

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163) $-10x - 4 \le -11x + 3$

A) $\{x \mid x \le 7\}$
B) $\{x \mid x \ge 7\}$
C) $\{x \mid x > -10\}$
D) $\{x \mid x < -10\}$

Answer: A

164) $24x + 28 > 4(5x + 4)$

A) $\{x \mid x < -3\}$
B) $\{x \mid x > -3\}$
C) $\{x \mid x > 24\}$
D) $\{x \mid x < 24\}$

Answer: B

165) $-2(5x - 3) < -12x + 12$

A) $\{x \mid x < -12\}$
B) $\{x \mid x < 3\}$
C) $\{x \mid x > -12\}$
D) $\{x \mid x > 3\}$

Answer: B

166) $\frac{9}{4}x + 2 < \frac{28}{9}$

A) $\left\{x \mid x > \frac{28}{9}\right\}$
B) $\left\{x \mid x > \frac{1.407374884e+15}{2.849934139e+15}\right\}$
C) $\left\{x \mid x < \frac{1.407374884e+15}{2.849934139e+15}\right\}$
D) $\left\{x \mid x < \frac{28}{9}\right\}$

Answer: C

167) $-\frac{8}{3}x - \frac{4}{3} < -\frac{7}{2}$

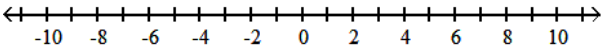
A) $\left\{x \mid x < -\frac{7}{2}\right\}$
B) $\left\{x \mid x > \frac{2.814749767e+14}{3.464307406e+14}\right\}$
C) $\left\{x \mid x > -\frac{1.970324837e+15}{4.503599627e+15}\right\}$
D) $\left\{x \mid x > \frac{13}{2}\right\}$

Answer: B

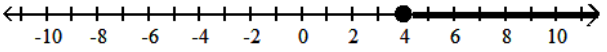
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Solve the linear inequality. Graph the solution set on a number line, and express the solution using interval notation.

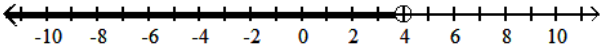
168) $3x + 5 < 17$



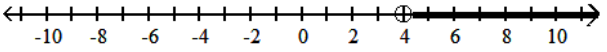
A) $[4, \infty)$



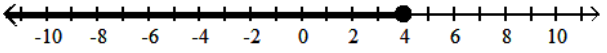
B) $(-\infty, 4)$



C) $(4, \infty)$

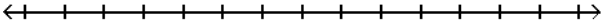


D) $(-\infty, 4]$

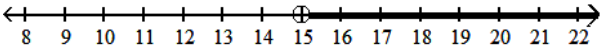


Answer: B

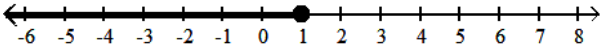
169) $8x + 7 > 7x + 8$



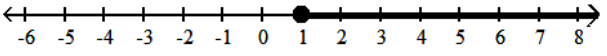
A) $(15, \infty)$



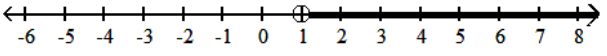
B) $(-\infty, 1]$



C) $[1, \infty)$



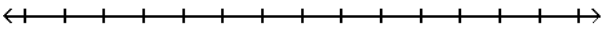
D) $(1, \infty)$



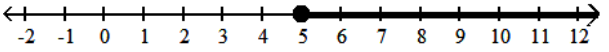
Answer: D

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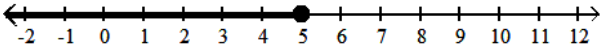
170) $3x + 7 \leq 2x + 12$



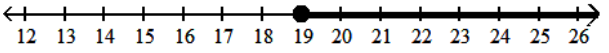
A) $[5, \infty)$



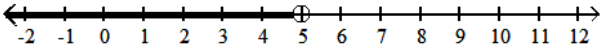
B) $(-\infty, 5]$



C) $[19, \infty)$

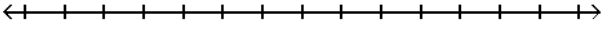


D) $(-\infty, 5)$

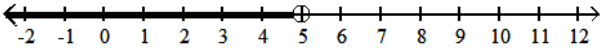


Answer: B

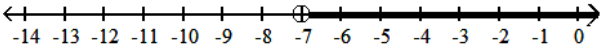
171) $3x - 6 \geq 2x - 1$



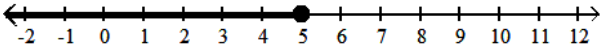
A) $(-\infty, 5)$



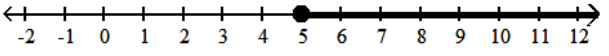
B) $(-7, \infty)$



C) $(-\infty, 5]$



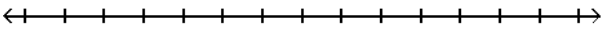
D) $[5, \infty)$



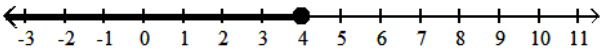
Answer: D

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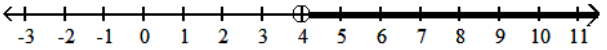
172) $-2x-5>-3x-1$



A) $(-\infty, 4]$



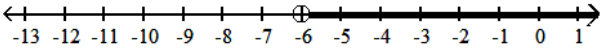
B) $(4, \infty)$



C) $[4, \infty)$

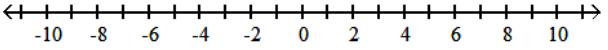


D) $(-6, \infty)$

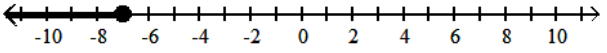


Answer: B

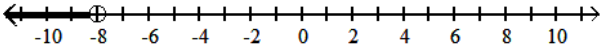
173) $8-3(2-x) \leq -22$



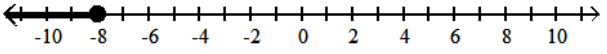
A) $(-\infty, -7]$



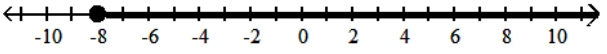
B) $(-\infty, -8)$



C) $(-\infty, -8]$



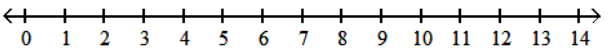
D) $[-8, \infty)$



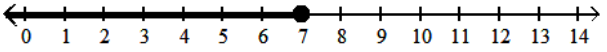
Answer: C

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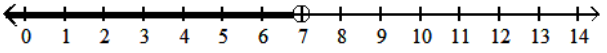
174) $-8x + 4 \leq -2(3x + 5)$



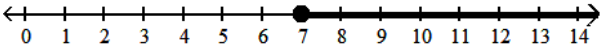
A) $(-\infty, 7]$



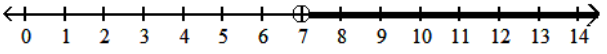
B) $(-\infty, 7)$



C) $[7, \infty)$

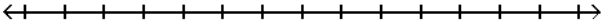


D) $[7, \infty)$

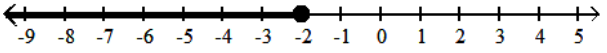


Answer: C

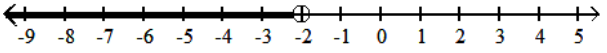
175) $-6(2x - 9) < -18x + 42$



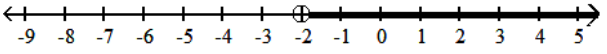
A) $(-\infty, -2]$



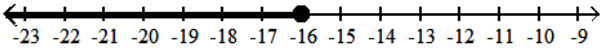
B) $(-\infty, -2)$



C) $(-2, \infty)$



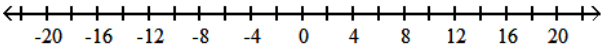
D) $(-\infty, -16]$



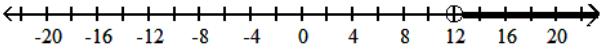
Answer: B

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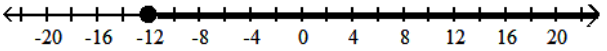
176) $\frac{1}{2}x \geq 5 + \frac{1}{12}x$



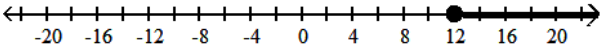
A) (12, ∞)



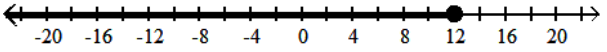
B) [- 12, ∞)



C) [12, ∞)



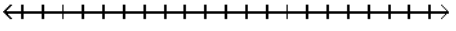
D) (- ∞, 12]



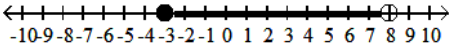
Answer: C

Solve the three-part linear inequality. Graph the solution set on a number line, and express the solution using interval notation.

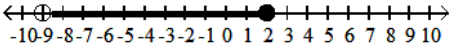
177) $-6 < x - 3 \leq 5$



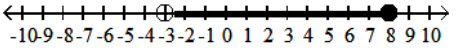
A) [- 3, 8)



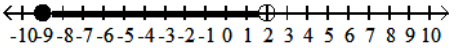
B) (- 9, 2]



C) (- 3, 8]



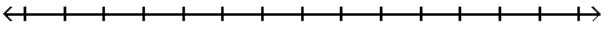
D) [- 9, 2)



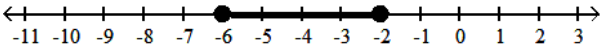
Answer: C

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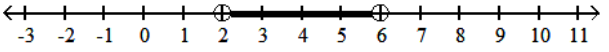
178) $5 \le 3x - 1 \le 17$



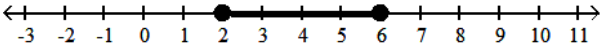
A) [- 6, - 2]



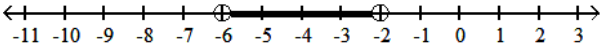
B) (2, 6)



C) [2, 6]

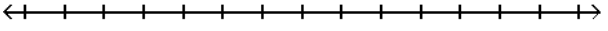


D) (- 6, - 2)

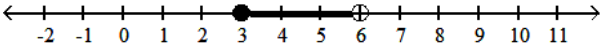


Answer: C

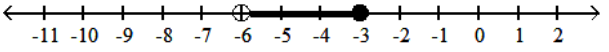
179) $-16 \le -2x - 4 < -10$



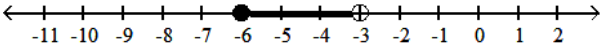
A) [3, 6)



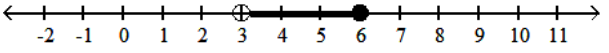
B) (- 6, - 3]



C) [- 6, - 3)



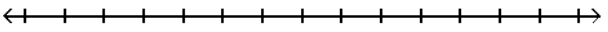
D) (3, 6]



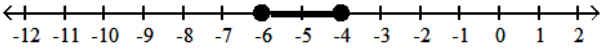
Answer: D

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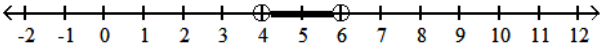
180) $-7 \le -2x + 5 \le -3$



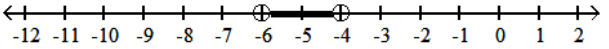
A) $[-6, -4]$



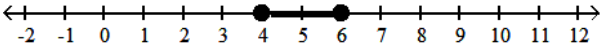
B) $(4, 6)$



C) $(-6, -4)$

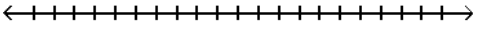


D) $[4, 6]$

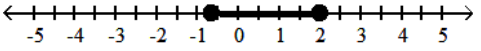


Answer: D

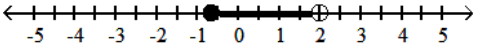
181) $0 \le \frac{3x + 2}{2} < 4$



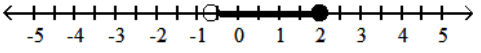
A) $\left[-\frac{2}{3}, 2\right]$



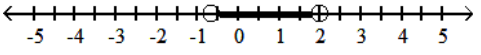
B) $\left[-\frac{2}{3}, 2\right)$



C) $\left(-\frac{2}{3}, 2\right]$



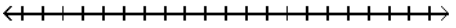
D) $\left(-\frac{2}{3}, 2\right)$



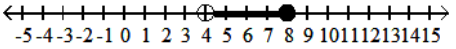
Answer: B

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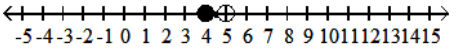
182) $8 \le \frac{5}{4}x + 3 < 13$



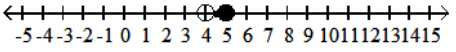
A) $(4, 8]$



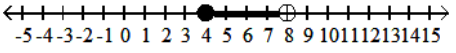
B) $[4, 5)$



C) $(4, 5]$

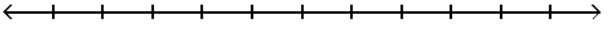


D) $[4, 8)$

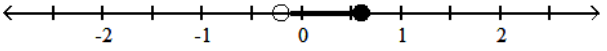


Answer: D

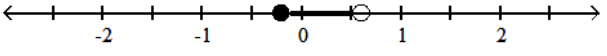
183) $-\frac{1}{3} \le \frac{5x - 1}{6} < \frac{1}{3}$



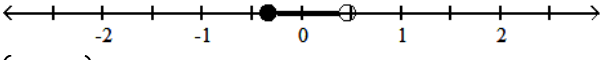
A) $\left[-\frac{1}{5}, \frac{3}{5}\right]$



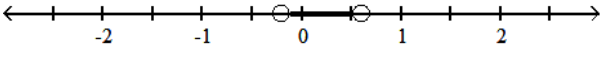
B) $\left[-\frac{1}{5}, \frac{3}{5}\right)$



C) $\left[-\frac{1}{3}, \frac{7}{15}\right)$



D) $\left(-\frac{1}{5}, \frac{3}{5}\right)$



Answer: B

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Solve the compound inequality. Express the solution using interval notation or state that there is no solution.

184) $x - 1 \le 7$ and $x - 1 > -6$

A) $(-5, 8]$
B) $(-7, 6]$
C) $[-7, 6)$
D) $[-5, 8)$

Answer: A

185) $4x + 7 \ge 1$ and $8x - 1 < 8$

A) $\left[-\frac{3}{2}, \frac{7}{8}\right)$
B) $\left(-\frac{3}{2}, \frac{7}{8}\right]$
C) $\left[-\frac{3}{2}, \frac{9}{8}\right)$
D) $\left(-\frac{3}{2}, \frac{9}{8}\right]$

Answer: C

186) $2x - 1 > 1$ or $-x + 4 \ge -6$

A) $(1, 10]$
B) $(1, \infty)$
C) $[1, 10)$
D) $(-\infty, \infty)$

Answer: D

187) $-6x + 1 \ge 13$ or $3x + 3 \ge -9$

A) $(-\infty, \infty)$
B) $[-4, -2]$
C) $[-2, \infty)$
D) $[-4, \infty)$

Answer: A

Solve the problem.

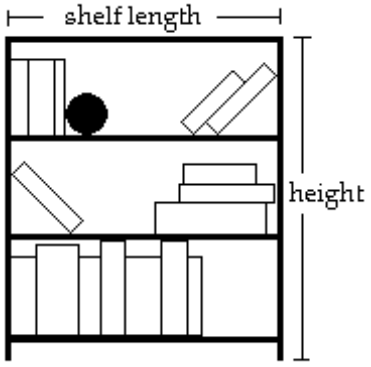
188) When making a long distance call from his landline, Martin pays $2.25 for the first three minutes. After that, each additional minute or portion of a minute costs $0.25. How many minutes can Martin call long distance if the cost is to be no more than $5.00?

A) up to 11 minutes
B) up to 20 minutes
C) up to 14 minutes
D) at least 2 minutes

Answer: C

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189) A bookcase is to be constructed as shown in the figure below. The height of the bookcase is 3 feet longer than the length of a shelf. If 18 feet of lumber are available for the entire unit (including the shelves, but NOT the back of the bookcase), what values are possible for the length of a shelf?



A) length ≤ 3 feet
B) length ≤ 7.5 feet
C) length ≥ 2 feet
D) length ≤ 2 feet

Answer: D

190) Johnny's rental company charges $54 per day for a small truck plus $0.12 per mile. Annie's rental company charges $108 per day for the same size truck plus $0.06 per mile. For what number of miles driven (in one day) will Annie's company be cheaper?
A) less than 900 miles
B) less than 450 miles
C) more than 1,000 miles
D) more than 900 miles

Answer: D

191) A mechanic's estimate for a car repair ranges from $961 to $1,054. If the parts cost $775 and the mechanic charges $31 per hour for labor, what is the range of the mechanic's estimates for the time it will take to replace the part?
A) 1 to 9 hours
B) 6 to 11 hours
C) 6 to 9 hours
D) 31 to 34 hours

Answer: C

192) Behemoth Back Packs, Inc. finds that the cost to make each of its backpacks is $38 and each backpack sells for $99. If the company's fixed costs for a month are $4,424, how many backpacks must the company sell in a month in order to make a profit?
A) at least 33 backpacks
B) at least 146 backpacks
C) at most 75 backpacks
D) at least 73 backpacks

Answer: D

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Solve the absolute value equation.

193) $|x| = 4$

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

B) $\{16\}$

C) $\{4\}$

D) $\{-4\}$

Answer: A

194) $|x - 5| = 6$

A) $\emptyset$

B) $\{-11\}$

C) $\{1, 11\}$

D) $\{-1, 11\}$

Answer: D

195) $|2x + 6| = 3$

A) $\left\{-\frac{9}{2}, -\frac{3}{2}\right\}$

B) $\left\{-\frac{3}{2}, -\frac{1}{2}\right\}$

C) $\emptyset$

D) $\left\{\frac{3}{2}, \frac{9}{2}\right\}$

Answer: A

196) $\left|\frac{11x + 22}{2}\right| = 11$

A) $\{-4, 0\}$

B) $\{4, 0\}$

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

D) $\emptyset$

Answer: A

197) $|4x + 6| + 2 = 10$

A) $\left\{-\frac{1}{2}, \frac{7}{2}\right\}$

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

C) $\emptyset$

D) $\left\{-\frac{7}{2}, \frac{1}{2}\right\}$

Answer: D

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198) $|7x - 5| = 0$

A) $\emptyset$

B) $\left\{\frac{5}{7}\right\}$

C) $\left\{-\frac{5}{7}\right\}$

D) $\left\{\frac{5}{7}, -\frac{5}{7}\right\}$

Answer: B

199) $|3y - 9| = -8$

A) $\emptyset$

B) $\left\{\frac{1}{3}, \frac{17}{3}\right\}$

C) $\left\{\frac{1}{3}, 0\right\}$

D) $\left\{\frac{17}{3}\right\}$

Answer: A

200) $3|x + 1| - 6 = 3$

A) $\{2, 2\}$

B) $\{2\}$

C) $\{-4\}$

D) $\{-4, 2\}$

Answer: D

Solve the absolute value inequality. Write your answer in interval notation.

201) $|x - 8| < 10$

A) $(-\infty, 18)$

B) $(-18, 2)$

C) $(-2, 18)$

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

Answer: C

202) $|7x| \leq 3$

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

B) $\left(-\frac{7}{3}, \frac{7}{3}\right)$

C) $\left[0, \frac{3}{7}\right]$

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

Answer: D

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203) $|4x - 7| \le 0$

A) $\left(-\infty, \frac{7}{4}\right] \cup \left[\frac{7}{4}, \infty\right)$

B) $\emptyset$

C) $\left\{\frac{7}{4}\right\}$

D) $\left(-\frac{7}{4}, \frac{7}{4}\right)$

Answer: C

204) $|7k + 6| \le 4$

A) $\left[-\frac{10}{7}, -\frac{2}{7}\right]$

B) $\left(-\frac{10}{7}, -\frac{2}{7}\right)$

C) $\left(-\infty, -\frac{10}{7}\right] \cup \left[-\frac{2}{7}, \infty\right)$

D) $\left(-\infty, -\frac{2}{7}\right]$

Answer: A

205) $|7 - 8x| \le 4$

A) $\emptyset$

B) $\left(-\infty, \frac{3}{8}\right] \cup \left[\frac{11}{8}, \infty\right)$

C) $\left[-\frac{11}{8}, -\frac{3}{8}\right]$

D) $\left[\frac{3}{8}, \frac{11}{8}\right]$

Answer: D

206) $|5k + 5| + 5 < 11$

A) $\left(-\infty, -\frac{11}{5}\right)$

B) $\left(-\frac{11}{5}, \frac{1}{5}\right)$

C) $\left(-\infty, \frac{1}{5}\right)$

D) $\left(-\infty, -\frac{11}{5}\right) \cup \left(\frac{1}{5}, \infty\right)$

Answer: B

207) $|x - 17| > 3$

A) $(14, 20)$

B) $(20, \infty)$

C) $(-\infty, 14) \cup (20, \infty)$

D) $(-20, -14)$

Answer: C

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208) $|4k - 9| \geq 6$

A) $\left[\frac{15}{4}, \infty\right)$

B) $\left(\frac{3}{4}, \frac{15}{4}\right)$

C) $\left[\frac{3}{4}, \frac{15}{4}\right]$

D) $\left(-\infty, \frac{3}{4}\right] \cup \left[\frac{15}{4}, \infty\right)$

Answer: D

209) $|3k - 5| > -3$

A) $\left(-\infty, \frac{2}{3}\right) \cup \left(\frac{8}{3}, \infty\right)$

B) $\left(\frac{8}{3}, \infty\right)$

C) $\left(\frac{2}{3}, \frac{8}{3}\right)$

D) $(-\infty, \infty)$

Answer: D

210) $|2k + 2| + 6 > 15$

A) $\left(\frac{7}{2}, \infty\right)$

B) $\left(-\frac{11}{2}, \frac{7}{2}\right)$

C) $\left(-\infty, -\frac{11}{2}\right]$

D) $\left(\infty, -\frac{11}{2}\right) \cup \left(\frac{7}{2}, \infty\right)$

Answer: D

211) $\left|\frac{7y + 28}{4}\right| > 7$

A) $(-\infty, -8) \cup (0, \infty)$

B) $(-8, 0)$

C) $(0, \infty)$

D) $(-8, 8)$

Answer: A

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212) $|3x - 7| > 0$

A) $\left(\frac{7}{3}, \infty\right)$

B) $\left(-\frac{7}{3}, \frac{7}{3}\right)$

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

D) $(-\infty, \infty)$

Answer: C

213) $-|2 - 2x| + 3 > -1$

A) $(-1, 3)$

B) $(-\infty, -1) \cup (3, \infty)$

C) $(-1, \infty)$

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

Answer: A

214) $2|x + 8| - 9 < 0$

A) $\left(-\frac{25}{2}, -\frac{7}{2}\right)$

B) $\left(-\frac{7}{2}, \frac{25}{2}\right)$

C) $\left(-\infty, -\frac{7}{2}\right)$

D) $\left(-\infty, -\frac{25}{2}\right) \cup \left(-\frac{7}{2}, \infty\right)$

Answer: A

Solve the polynomial inequality. Express the solution in interval notation.

215) $(x - 7)(x + 3) > 0$

A) $(-\infty, -3) \cup (7, \infty)$

B) $(-3, \infty)$

C) $(-3, 7)$

D) $(-\infty, -7) \cup (3, \infty)$

Answer: A

216) $(x + 7)(x + 6) \leq 0$

A) $(-\infty, -7] \cup [-6, \infty)$

B) $(-\infty, -7) \cup (-6, \infty)$

C) $[-7, -6]$

D) $(-7, -6)$

Answer: C

217) $x^2 + 5x + 6 > 0$

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

B) $(-3, -2)$

C) $(-2, \infty)$

D) $(-\infty, -3)$

Answer: A

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218) $x^2 - 4x - 12 \le 0$

A) $[6, \infty)$

B) $(-\infty, -2] \cup [6, \infty)$

C) $[-2, 6]$

D) $(-\infty, -2]$

Answer: C

219) $(x + 6)(x - 1)(x - 4) > 0$

A) $(4, \infty)$

B) $(-6, 1) \cup (4, \infty)$

C) $(-\infty, -6) \cup (1, 4)$

D) $(-\infty, 1)$

Answer: B

220) $(x + 4)(x + 1)(x - 2) < 0$

A) $(-\infty, -4) \cup (-1, 2)$

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

C) $(-4, -1) \cup (2, \infty)$

D) $(2, \infty)$

Answer: A

221) $x^3 - 7x^2 > 0$

A) $(7, \infty)$

B) $(-\infty, 7)$

C) $(0, 7)$

D) $(-\infty, 0) \cup (7, \infty)$

Answer: A

222) $x^3 - 5x^2 - 14x > 0$

A) $(-2, 0) \cup (7, \infty)$

B) $(-7, 0) \cup (2, \infty)$

C) $(-\infty, -2) \cup (0, 7)$

D) $(-2, \infty)$

Answer: A

223) $2x^2 - 5x \ge 7$

A) $(-\infty, -1) \cup \left(\frac{7}{2}, \infty\right)$

B) $(-\infty, -1] \cup \left[\frac{7}{2}, \infty\right)$

C) $\left[-1, \frac{7}{2}\right]$

D) $\left(-1, \frac{7}{2}\right)$

Answer: B

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224) $x^3 + 2x^2 > x + 2$

A) $(-1, 1) \cup (2, \infty)$
B) $(-2, -1) \cup (1, \infty)$
C) $(-\infty, -2) \cup (-1, 1)$
D) $(-\infty, -1) \cup (1, 2)$

Answer: B

Solve the rational inequality. Express the solution in interval notation.

225) $\frac{x - 2}{x + 1} < 0$

A) $(-1, 2)$
B) $(-\infty, -1) \cup (2, \infty)$
C) $(-\infty, -1)$
D) $(2, \infty)$

Answer: A

226) $\frac{x - 1}{x + 8} > 0$

A) $(-8, 1)$
B) $(-\infty, -8) \cup (1, \infty)$
C) $(1, \infty)$
D) $(-\infty, -8)$

Answer: B

227) $\frac{x - 1}{x + 5} < 1$

A) $(-\infty, -5)$
B) $(-5, 1)$
C) $(-5, \infty)$
D) $(-\infty, -5) \cup (1, \infty)$

Answer: C

228) $\frac{x + 8}{x + 1} < 7$

A) $\left(-1, \frac{1}{6}\right)$
B) $(-\infty, -1) \cup \left(\frac{1}{6}, \infty\right)$
C) $\left(-\infty, \frac{1}{6}\right) \cup (1, \infty)$
D) $(-\infty, -1) \cup (1, \infty)$

Answer: B

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229) $\frac{6x - 5}{x + 2} \leq 5$

A) $(-2, 15)$
B) $(-2, 15]$
C) $(-2, 10)$
D) $(-2, 10]$

Answer: B

230) $\frac{(x + 12)(x - 3)}{x - 1} \geq 0$

A) $(-\infty, -12] \cup (1, 3]$
B) $(-\infty, -12] \cup [3, \infty)$
C) $[-12, 1) \cup [3, \infty)$
D) $[-12, 1) \cup (1, 3]$

Answer: C

231) $\frac{(x - 4)^2}{x^2 - 25} > 0$

A) $(-5, 4) \cup (4, 5)$
B) $(-\infty, -5) \cup (4, 5)$
C) $(-5, 4) \cup (5, \infty)$
D) $(-\infty, -5) \cup (5, \infty)$

Answer: D

232) $\frac{12}{x - 5} > \frac{10}{x - 1}$

A) $(-\infty, -19) \cup (5, \infty)$
B) $(-19, 1) \cup (5, \infty)$
C) $(-19, 1) \cup (1, 5)$
D) $(-\infty, -19) \cup (1, 5)$

Answer: B

233) $\frac{2x}{x + 7} < x$

A) $(-\infty, 5) \cup (7, \infty)$
B) $(-7, -5) \cup (0, \infty)$
C) $(-\infty, -7) \cup (-5, 0)$
D) $(-\infty, -7) \cup (0, \infty)$

Answer: B

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

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51) A
52) A
53) B
54) A
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56) A
57) B
58) A
59) C
60) C
61) C
62) D
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99) D
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101) D
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148) A
149) C
150) D

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151) B
152) A
153) D
154) B
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156) C
157) D
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161) C
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185) C
186) D
187) A
188) C
189) D
190) D
191) C
192) D
193) A
194) D
195) A
196) A
197) D
198) B
199) A
200) D

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201) C
202) D
203) C
204) A
205) D
206) B
207) C
208) D
209) D
210) D
211) A
212) C
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230) C
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232) B
233) B

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