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TEXTBOOK TESTBANKS

Test Bank for Finite Mathematics with Applications In the Management Natural and Social Sciences 13th Lial

TEST BANK SAMPLE PREVIEW

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RESOURCE TYPE

Test Bank

ISBN

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

Determine whether the statement is true or false.

1) Every rational number is an integer.
   A) True
   B) False

   Answer: B

2) Every irrational number is an integer.
   A) True
   B) False

   Answer: B

3) Every whole number is a real number.
   A) True
   B) False

   Answer: A

4) Some rational numbers are irrational.
   A) True
   B) False

   Answer: B

5) Some rational numbers are integers.
   A) True
   B) False

   Answer: A

6) Every integer is an irrational number.
   A) True
   B) False

   Answer: B

7) The absolute value of any number is positive.
   A) True
   B) False

   Answer: B

8) Some real numbers are integers.
   A) True
   B) False

   Answer: A

9) The absolute value of any nonzero number is positive.
   A) True
   B) False

   Answer: A

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10) The absolute value of any nonzero number is an irrational number.
A) True
B) False
Answer: B

Name the property illustrated.

11) $2 \cdot 1 = 2$
A) Associative property
B) Commutative property
C) Distributive property
D) Identity property
Answer: D

12) $(7 + 9) + 6 = (9 + 7) + 6$
A) Associative property
B) Identity property
C) Distributive property
D) Commutative property
Answer: D

13) $1 + 0 = 1$
A) Associative property
B) Distributive property
C) Commutative property
D) Identity property
Answer: D

14) $8(x + 2) = 8x + 8 \cdot 2$
A) Commutative property
B) Distributive property
C) Associative property
D) Identity property
Answer: B

15) $8 + 3 = 3 + 8$
A) Distributive property
B) Identity property
C) Commutative property
D) Associative property
Answer: C

16) $(7 \cdot 8) \cdot 8 = 7 \cdot (8 \cdot 8)$
A) Identity property
B) Distributive property
C) Associative property
D) Commutative property
Answer: C

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17) $5 \cdot 6 = 6 \cdot 5$

A) Distributive property
B) Commutative property
C) Identity property
D) Associative property

Answer: B

18) $8 + (6 + 9) = (8 + 6) + 9$

A) Commutative property
B) Associative property
C) Distributive property
D) Identity property

Answer: B

19) $5(9 + 13) = (9 + 13)5$

A) Distributive and associative properties
B) Commutative property
C) Associative and commutative properties
D) Identity and associative properties

Answer: B

Evaluate the expression, given $x = -2$, $y = 3$, and $a = -4$.

20) $-3x + 4y + 7a$

A) 11
B) - 10
C) - 45
D) 10

Answer: B

21) $(7x + 5y)(-4a)$

A) 176
B) - 644
C) - 16
D) 16

Answer: D

22) $-9a - 7y + 8x$

A) - 31
B) - 1
C) 70
D) 74

Answer: B

23) $(-8 + x)(2 + y)(-9 - a)$

A) - 250
B) 650
C) 250
D) 390

Answer: C

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24) $(-8a)(8x + 4y)$

A) 896
B) - 128
C) 512
D) 128

Answer: B

25) $-7(x + 2) + 3a^2$

A) 48
B) - 12
C) - 48
D) 20

Answer: A

Evaluate the expression using order of operations.

26) $(6 + (-3))[3 + (2 + 6)]$

A) 14
B) 10
C) 35
D) 33

Answer: D

27) $\frac{(-5) \cdot (2 + 5) + (-5) \cdot 7}{(-5) \cdot (7 - 1)}$

A) $\frac{14}{3}$

B) $\frac{3}{7}$

C) $\frac{7}{3}$

D) $\frac{71}{30}$

Answer: C

28) $\frac{(-2) \cdot (8 - 7) + (-2) \cdot 4}{(-2) \cdot (4 - 1)}$

A) $\frac{50}{3}$

B) $\frac{5}{3}$

C) $\frac{3}{5}$

D) $\frac{11}{6}$

Answer: B

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29) $2[-4+8(-6+(-5))]$

A) -184

B) -92

C) -96

D) -88

Answer: A

30) $-13+(5 \cdot 4+40) \div 5$

A) -1

B) 15

C) -3

D) 1

Answer: A

31) $(8+3)[8+(7+3)]$

A) 98

B) 198

C) 25

D) 29

Answer: B

32) $8[2+5(6-4)]$

A) 96

B) 108

C) 112

D) 26

Answer: A

33) $\frac{7(8+10)-5}{2}$

A) $\frac{2}{61}$

B) $\frac{71}{2}$

C) $\frac{61}{2}$

D) $\frac{121}{2}$

Answer: D

34) $3 \cdot 5^2$

A) 225

B) 375

C) 75

D) 15

Answer: C

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35) $(8 + (-3))[4 + (\sqrt{36} + 3^2)]$

A) 95
B) 29
C) 21
D) 17

Answer: A

Express each of the following statements in symbols, using <, >, ≤, or ≥.

36) 4 is less than 7.

A) $4 \leq 7$
B) $4 > 7$
C) $4 < 7$
D) $7 < 4$

Answer: C

37) - 6 is greater than - 9.

A) $-6 < -9$
B) $-9 > -6$
C) $-6 \geq -9$
D) $-6 > -9$

Answer: D

38) x is less than or equal to 1.

A) $x \leq 1$
B) $x \geq 1$
C) $1 \leq x$
D) $x < 1$

Answer: A

39) y is greater than or equal to - 4.

A) $y > -4$
B) $-4 \geq y$
C) $y \leq -4$
D) $y \geq -4$

Answer: D

40) w is positive.

A) $w > 0$
B) $w \geq 0$
C) $w < 0$
D) $w \leq 0$

Answer: A

41) s is negative.

A) $s \geq 0$
B) $s \leq 0$
C) $s > 0$
D) $s < 0$

Answer: D

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42) p is at most 77

A) $p > 77$
B) $p \leq 77$
C) $p < 77$
D) $p \geq 77$

Answer: B

43) p is at least 92

A) $p > 92$
B) $p < 92$
C) $p \leq 92$
D) $p \geq 92$

Answer: D

Insert <, =, or > to write a true statement.

44) $\frac{7}{8}$ ___ 0.875

A) >
B) =
C) <

Answer: B

45) $\frac{3}{11}$ ___ 0.27

A) =
B) >
C) <

Answer: B

46) $\sqrt{29}$ ___ $\frac{2,456}{401}$

A) <
B) =
C) >

Answer: A

47) - 9 ___ - 2

A) =
B) >
C) <

Answer: C

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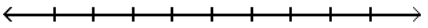
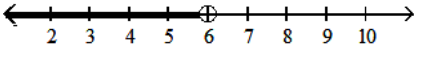
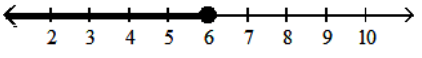
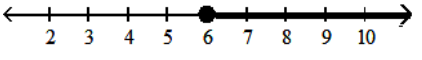
Graph the inequality on a number line.

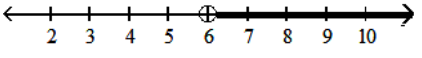
48) (6, ∞)



A) 

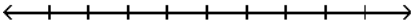
B) 

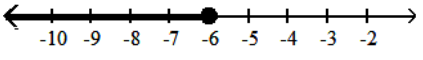
C) 

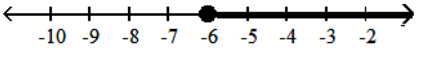
D) 

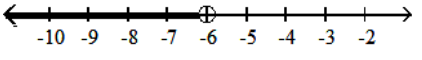
Answer: D

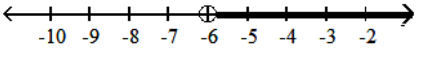
49) (- ∞, - 6)



A) 

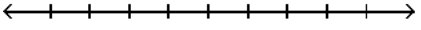
B) 

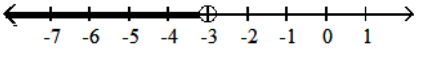
C) 

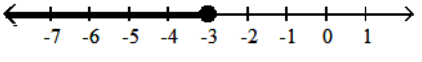
D) 

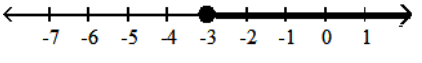
Answer: C

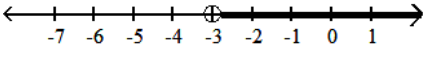
50) [- 3, ∞)



A) 

B) 

C) 

D) 

Answer: C

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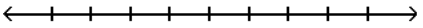
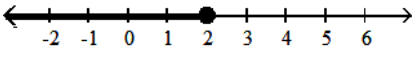
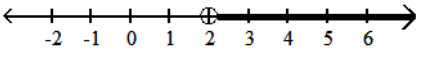
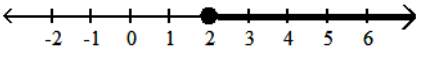
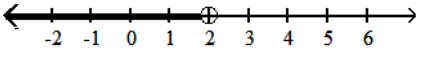
51) $(-\infty, 2]$



A) 

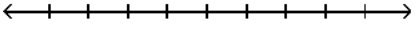
B) 

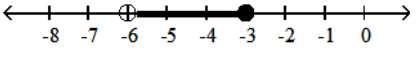
C) 

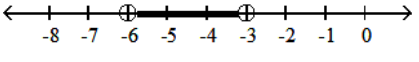
D) 

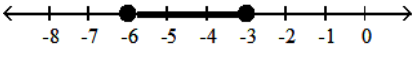
Answer: A

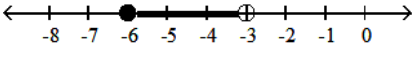
52) $[-6, -3]$



A) 

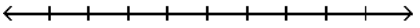
B) 

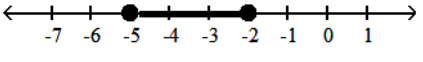
C) 

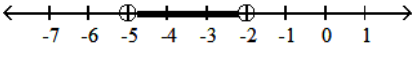
D) 

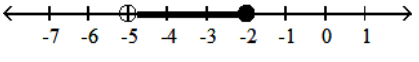
Answer: C

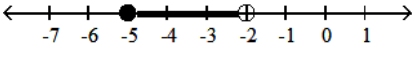
53) $(-5, -2]$



A) 

B) 

C) 

D) 

Answer: C

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Solve the problem.

54) Kafka Inc. imports hard drives and sells them on the internet. The profit is given by the equation P = 143n - 8,250, where n is the number of hard drives sold. Estimate the profit, to the nearest ten dollars, corresponding to the sale of 900 hard drives.

A) $120,470
B) $120,460
C) $120,440
D) $120,450

Answer: D

55) Kafka Inc. imports hard drives and sells them on the internet. The profit is given by the equation P = 124n - 7,000, where n is the number of hard drives sold. How many hard drives must be sold for the company to break even? Round your answer to the units place, in other words, to the nearest number of hard drives.

A) 54 hard drives
B) 76 hard drives
C) 60 hard drives
D) 56 hard drives

Answer: D

56) The two charts show the weight gain of some people and the weight loss of other people. Use the information given to answer the questions below.

Weight gain (in gms)		Weight loss (in gms)	
Abe	3,051	Don	-2,958
Bob	4,208	Ed	-2,177
Carl	1,695	Frank	-857

What is the difference between the weight gain of Abe and the weight loss of Don?

A) - 6,009 grams
B) 6,009 grams
C) 93 grams
D) - 93 grams

Answer: B

57) The two charts show the weight gain of some people and the weight loss of other people. Use the information given to answer the questions below.

Weight gain (in gms)		Weight loss (in gms)	
Abe	3,051	Don	-2,958
Bob	4,208	Ed	-2,177
Carl	1,695	Frank	-857

How much more weight did Ed lose than Frank?

A) 3,034 grams
B) 1,320 grams
C) - 1,320 grams
D) - 3,034 grams

Answer: B

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Evaluate the expression.

58) $-|18| - |-21|$

A) - 39
B) - 3
C) 39
D) 3

Answer: A

59) $-|-15| - |17|$

A) 2
B) - 32
C) 32
D) - 2

Answer: B

60) $-|-2| - |-25 - 22|$

A) - 45
B) 45
C) - 49
D) 49

Answer: C

Fill in the blank with either =, <, or > to make the statement true.

61) $|19| \_\_ |-19|$

A) >
B) =
C) <

Answer: B

62) $-|-11| \_\_ |11|$

A) >
B) =
C) <

Answer: C

63) $-|17| \_\_ |-17|$

A) >
B) =
C) <

Answer: C

64) $|3 - (-1)| \_\_ |-3 - 1|$

A) =
B) >
C) <

Answer: A

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65) $|4 - 2| \_\_ |2 - 4|$
A) =
B) >
C) <
Answer: A

66) $|9| \cdot |-4| \_\_ |4(9)|$
A) <
B) =
C) >
Answer: B

67) $|5 - 1| \_\_ |5| - |1|$
A) >
B) <
C) =
Answer: C

Use inequality symbols to rewrite the statement. Let x represent the unknown.

68) A Software company could lose up to 7% of its market share due to slow product delivery. Let x be the market share lost.
A) $x \geq -0.07$
B) $x \geq 0.07$
C) $x \leq 0.07$
D) $x \leq -0.07$
Answer: C

69) The market shakeout could result in as few as 10 companies remaining in business.
A) $x - 10 = 0$
B) $x \geq 10$
C) $x \leq 10$
D) $x = 10$
Answer: B

70) Computer company XYZ can't possibly spend less than $42 million in advertising to regain its market share.
A) $x \leq \$42$ million
B) $x < \$42$ million
C) $x > \$42$ million
D) $x \geq \$42$ million
Answer: D

71) The new software product will cost between $235 and $425 per unit.
A) $\$235 \leq x \leq \$425$
B) $\$235 < x < \$425$
C) $x > \$235, x < \$425$
D) $x \leq 425$
Answer: B

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72) When a baseball player is in a slump, he may get fewer than 5 hits in 18 times at bat. Let x represent the number of hits.

A) $5 < x < 18$

B) $x > \frac{5}{18}$

C) $x < 5$

D) $x < 18$

Answer: C

73) A detective makes more money than 70% of the population and is better educated than 65%. Find the average status and status incongruity for this person.

A) 2.5 and 32.5

B) 2.5 and 67.5

C) 32.5 and 2.5

D) 67.5 and 2.5

Answer: D

Use a calculator to evaluate the expression.

74) 2^3

A) 5

B) 4

C) 8

D) 6

Answer: C

75) 13^2

A) 26

B) 15

C) 338

D) 169

Answer: D

76) 3^4

A) 3

B) 12

C) 34

D) 81

Answer: D

77) -8^3

A) 512

B) 24

C) - 24

D) - 512

Answer: D

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78) $(-3)^4$

A) 12
B) - 81
C) - 12
D) 81

Answer: D

79) -6.1^4

A) - 1,384.58
B) 24.40
C) - 24.40
D) 1,384.58

Answer: A

80) $(-8.4)^4$

A) 4,978.7
B) - 4,978.7
C) 33.6
D) - 33.6

Answer: A

81) $(-3.9)^{10}$

A) - 814,040.608
B) 39
C) 814,040.608
D) - 39

Answer: C

82) $\left(\frac{3}{4}\right)^7$

A) 9.3333
B) 0.1335
C) 7.4915
D) 5.25

Answer: B

83) $\left(\frac{5}{2}\right)^2$

A) 6.25
B) 12.5
C) 1.25
D) 5

Answer: A

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Simplify. Leave answer with exponent.

84) $4^4 \cdot 4^9$

A) 16^{36}

B) 16^{13}

C) 4^{36}

D) 4^{13}

Answer: D

85) $(-6)^6 \cdot (-6)^5$

A) 36^{11}

B) -6^{11}

C) 6^{11}

D) 36^{30}

Answer: B

86) $(-3)^9 \cdot (-3)^3$

A) 3^{12}

B) -3^{12}

C) 9^{27}

D) 9^{12}

Answer: A

87) $(2y)^4 \cdot (2y)^8$

A) $4y^{12}$

B) $(2y)^{12}$

C) $2y^{32}$

D) $4y^{32}$

Answer: B

88) $4^3 \cdot 4^6$

A) 16^9

B) 4^9

C) 4^{18}

D) 16^{18}

Answer: B

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Identify the degree of the polynomial and list its coefficients.

89) $3x - 8$

A) degree: 1
coefficients: 3, - 8

B) degree: 1
coefficients: 3, 8

C) degree: 0
coefficients: 3, - 8

D) degree: 3
coefficients: 3, 8

Answer: A

90) $4x^2 - 3x + 7$

A) degree: 2
coefficients: 4, 3, 7

B) degree: 2
coefficients: 4, - 3, 7

C) degree: 4
coefficients: 4, - 3, 7

D) degree: 4
coefficients: - 3, 7

Answer: B

91) $-2x^3 - 6x^2 + 8x + 5$

A) degree: 3
coefficients: - 2, - 6, 8, 5

B) degree: - 2
coefficients: 3, 2, 1, 0

C) degree: 3
coefficients: 2, 6, 8, 5

D) degree: 2
coefficients: 2, - 6, 8, 5

Answer: A

92) $7x^5 - 9x^3 - 8x^2 + 9$

A) degree: 11
coefficients: 7, - 9, - 8, 9

B) degree: 7
coefficients: - 9, - 8, 9

C) degree: 5
coefficients: 7, - 9, - 8, 9

D) degree: 5
coefficients: 7, 9, 8, 9

Answer: C

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Add or subtract as indicated.

93) $(4n^6 + 6n^5 + 9) + (4n^6 - 8n^5 - 4)$

A) $8 - 2n^6 + 5n^5$

B) $8n^6 - 2n^5 + 5$

C) $11n^{11}$

D) $13n^6 - 4n^5 + 2$

Answer: B

94) $(4n^6 + 11n^3 + 11) - (-17n^3 + 2n^6 - 16)$

A) $57n^9$

B) $2n^6 + 28n^3 - 5$

C) $2n^6 + 28n^3 + 27$

D) $2n^6 + 13n^3 - 5$

Answer: C

95) $(8n^5 + 9n^3 - 2n) + (5n^5 - 4n^3 + 7n)$

A) $13n^5 + 5n^3 + 5n$

B) $23n^9$

C) $13n + 5n^5 + 5n^3$

D) $3n^5 + 4n^3 + 16n$

Answer: A

96) $(8n^7 + 11n^5 + 15n) - (3n^7 + 7n^5 + 4n)$

A) $5n^7 + 4n^5 + 11n$

B) $5n^7 + 4n^5 + 19n$

C) $20n^{13}$

D) $5n^7 + 14n^5 + 19n$

Answer: A

97) $(-3 + 2x^7 + 4x^9 + 4x^8) + (5x^8 + 7x^7 + 7 + 7x^9)$

A) $11x^{18} + 9x^{16} + 9x^{14} + 4$

B) $11x^9 + 9x^8 + 9x^7 + 4$

C) $29x^{48} + 4$

D) $2x^9 + 2x^8 + 11x^7 + 11$

Answer: B

98) $(9x^5 + 5x^7 + 6 - 8x^6) - (5 - 2x^6 + 7x^7 - 6x^5)$

A) $12x^7 - 10x^6 + 3x^5 + 11$

B) $-2x^7 - 10x^6 + 3x^5 + 11$

C) $12x^7 - 10x^6 + 3x^5 + 1$

D) $-2x^7 - 6x^6 + 15x^5 + 1$

Answer: D

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99) $(5x^9 + 8x^6 - 2x^2 + 10) - (10x^9 - 9x^5 + 4x^2 - 9)$

A) $-5x^9 + 8x^6 - 9x^5 - 6x^2 + 19$

B) $5x^9 + 8x^6 - 9x^5 - 6x^2 + 19$

C) $5x^9 + 8x^6 + 9x^5 - 6x^2 + 19$

D) $-5x^9 + 8x^6 + 9x^5 - 6x^2 + 19$

Answer: D

Find the product.

100) $(x - 5)(-4x + 12)$

A) $-4x^2 + 32x - 60$

B) $-4x^2 + 32x + 32$

C) $-4x^2 + 30x - 60$

D) $-4x^2 - 60x + 32$

Answer: A

101) $(3x + 6)(-5x - 1)$

A) $-2x^2 - 33x - 33$

B) $-15x^2 - 33x - 6$

C) $-15x^2 - 33x - 33$

D) $-2x^2 - 33x - 6$

Answer: B

102) $(x + 5y)(x + 10y)$

A) $x^2 + 15xy + 15y^2$

B) $x^2 + 12xy + 50y^2$

C) $x + 15xy + 50y$

D) $x^2 + 15xy + 50y^2$

Answer: D

103) $(x + 9y)(-5x + 10y)$

A) $x^2 - 35xy + 90y^2$

B) $-5x^2 - 35xy + 90y^2$

C) $-5x^2 - 35xy - 35y^2$

D) $x^2 - 35xy - 35y^2$

Answer: B

104) $(2x + 3)(2x - 3)$

A) $4x^2 - 12x - 9$

B) $4x^2 + 12x - 9$

C) $2x^2 - 12x - 9$

D) $4x^2 - 9$

Answer: D

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105) $(0.011x + 0.36)(0.9x - 0.23)$

A) $0.911x^2 + 0.32147x + 0.32147$

B) $0.911x^2 + 0.32147x - 0.0828$

C) $0.0099x^2 + 0.32147x + 0.32147$

D) $0.0099x^2 + 0.32147x - 0.0828$

Answer: D

106) $(8.3x - 1.7)(0.6x - 1.2)$

A) $8.9x^2 - 10.98x - 10.98$

B) $8.9x^2 - 10.98x + 2.04$

C) $4.98x^2 - 10.98x - 10.98$

D) $4.98x^2 - 10.98x + 2.04$

Answer: D

107) $(5p - 1)(25p^2 + 5p + 1)$

A) $125p^3 + 1$

B) $125p^3 + 30p^2 - 1$

C) $125p^3 - 1$

D) $25p^3 - 1$

Answer: C

108) $(3y - 4)(9y^2 + 12y + 16)$

A) $27y^3 + 48y^2 - 64$

B) $9y^3 + 64$

C) $27y^3 + 64$

D) $27y^3 - 64$

Answer: D

109) $-3x(7x^2 + 3x + 8)$

A) $-21x^3 + 3x^2 - 24x$

B) $-21x^3 - 9x^2 + 8x$

C) $-21x^3 - 33x^2$

D) $-21x^3 - 9x^2 - 24x$

Answer: D

Find expressions for the Revenue, Cost, and Profit from selling x thousand items.

110)

Item Price	Fixed Cost	Variable Cost
$7.00	$41,723	4,236x

A) R = 7,000x; C = 83,446 + 4,236x; P = 2,764x - 41,723

B) R = 7,000x; C = 41,723 + 4,236x; P = 2,864x - 41,723

C) R = 7,000x; C = 41,723 + 4,236x; P = 2,764x - 41,723

D) R = 14,000x; C = 41,723 + 4,236x; P = 2,764x - 41,723

Answer: C

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111) Item Price Fixed Cost Variable Cost

$3.00 $131,282 $-3x^2 + 3480x - 100$

A) $R = 3{,}000x;\ C = -3x^2 + 3480x + 131{,}182;\ P = 3x^2 - 3{,}180x - 131{,}282$

B) $R = 3{,}000x;\ C = -3x^2 + 3480x + 131{,}282;\ P = 3x^2 - 3{,}180x - 131{,}182$

C) $R = 3{,}000x;\ C = 3x^2 + 3480x + 131{,}182;\ P = -3x^2 - 3{,}180x - 131{,}182$

D) $R = 3{,}000x;\ C = -3x^2 + 3480x + 131{,}182;\ P = 3x^2 - 3{,}180x - 131{,}182$

Answer: D

Solve the problem.

112) The polynomial $0.0051x^3 - 0.0053x^2 + 0.185x + 1.4$ gives the approximate total earnings of a company, in millions of dollars, where x = 0 corresponds to 1996, x = 1 corresponds to 1997, and so on. This model is valid for the years from 1996 to 2000. Determine the earnings for 1998.

A) $1.83 million

B) $2.05 million

C) $1.58 million

D) $1.79 million

Answer: D

113) The polynomial $0.0039x^4 + 0.0035x^3 + 0.0035x^2 + 0.14x + 1.13$ gives the predicted sales volume of a company, in millions of items, where x is the number of years from now. Determine the predicted sales 20 years from now.

A) 583.99 million

B) 653.2 million

C) 657.33 million

D) 853.83 million

Answer: C

114) The polynomial $-0.015x^3 + 1.05x$ gives the alcohol level in an average person's bloodstream x hours after drinking 8 oz of 100- proof whiskey. If the level exceeds 1.5 units, a person is legally drunk. Would a person be drunk after 7 hours?

A) Yes

B) No

Answer: A

115) The distance, s, in feet, traveled by a body falling freely from rest in t seconds is approximated by the equation $s = 16t^2$. An experimenter on a ladder releases a marble from rest. The marble takes 5 seconds to fall to the ground. How high was the marble when it was released?

A) 25 ft

B) 80 ft

C) 400 ft

D) 6,400 ft

Answer: C

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116) If an object is dropped, the distance it falls is given by $d = \frac{1}{2}gt^2$, where g is about 32 ft/sec^2. Find the distance an object would fall in 10 seconds.

A) 1,600 ft
B) 160 ft
C) 800 ft
D) 3,200 ft

Answer: A

117) The position of an object moving in a straight line is given by $s = 9t^2 - 3t$, where s is in meters and t is the time in seconds the object has been in motion. How far will an object move in 6 seconds?

A) 36 m
B) 306 m
C) 216 m
D) 54 m

Answer: B

118) The polynomial $-0.1t^2 + 1.8t$ represents the yearly income (or loss) from a real estate investment, where t is time in years. After what year does income begin to decline?

A) year 8
B) year 12.00
C) year 18
D) year 9

Answer: D

119) Total profit is defined as total revenue minus total cost. R and C are the revenue and cost from the sale of x televisions. If $R = 290x - 0.6x^2$ and $C = 3{,}000 + 0.5x^2$, find the profit from the sale of 90 televisions.

A) $22,290
B) $14,190
C) $20,190
D) $28,290

Answer: B

Factor out the greatest common factor.

120) $8m^8 - 40m^6 + 36m^3$

A) $m^3(8m^5 - 40m^3 + 36)$
B) $4m^3(2m^5 - 10m^3 + 9)$
C) No common factor
D) $4(2m^8 - 10m^6 + 9m^3)$

Answer: B

121) $12m^9 - 32m^4 - 24m^2$

A) No common factor
B) $4(3m^9 - 8m^4 - 6m^2)$
C) $m^2(12m^7 - 32m^2 - 24)$
D) $4m^2(3m^7 - 8m^2 - 6)$

Answer: D

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122) $80x^7y^9 - 64x^4y^7 - 112x^2y^3$

A) $16(5x^7y^9 - 4x^4y^7 - 7x^2y^3)$

B) No common factor

C) $16x^2(5x^5y^9 - 4x^2y^7 - 7y^3)$

D) $16x^2y^3(5x^5y^6 - 4x^2y^4 - 7)$

Answer: D

123) $60x^9y^9 - 36x^2y^6 - 96x^7y^2$

A) $12x^2y^2(5x^7y^7 - 3y^4 - 8x^5)$

B) No common factor

C) $12(5x^9y^9 - 3x^2y^6 - 8x^7y^2)$

D) $12x^2(5x^7y^9 - 3y^6 - 8x^5y^2)$

Answer: A

124) $17m^2 - 10r^3$

A) $3(5m^2 - 3r^3)$

B) $2(8m^2 + 5r^3)$

C) No common factor

D) $m^2(17 - 10m)$

Answer: C

125) $x^6 - 13xy^3 + 11x^3y^8 - 3x^6y^3$

A) $x(x^5 - 13y^3 + 11x^2y^8 - 3x^5y^3)$

B) $xy^3(x^5 - 13 + 11x^2y^5 - 3x^5)$

C) $xy(x^5 - 13y^2 + 11x^2y^7 - 3x^5y^2)$

D) $x^2(x^5 - 13y^2 + 11x^2y^7 - 3x^5y^2)$

Answer: A

126) $6(2y - 1)^4 + 8(2y - 1)^5$

A) $(2y + 1)(8y + 1)$

B) $2(2y - 1)^4(8y - 1)$

C) $2(2y + 1)^4(8y + 1)$

D) $(2y - 1)(8y - 1)$

Answer: B

127) $5(x + 2)^4 + 6(x + 2)^6$

A) $11(x + 2)^4$

B) $(x + 2)^4(6x^2 + 24x + 29)$

C) $(x + 2)^4(6x^2 + 29)$

D) $11(x + 2)$

Answer: B

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Factor completely.

128) $x^2 - x - 72$

A) Prime
B) $(x + 8)(x - 9)$
C) $(x + 9)(x - 8)$
D) $(x + 1)(x - 72)$

Answer: B

129) $x^2 + 5x - 50$

A) Prime
B) $(x - 10)(x + 5)$
C) $(x - 10)(x + 1)$
D) $(x + 10)(x - 5)$

Answer: D

130) $x^2 + 7x + 12$

A) Prime
B) $(x - 4)(x + 1)$
C) $(x + 4)(x + 3)$
D) $(x - 4)(x + 3)$

Answer: C

131) $x^2 - x - 45$

A) $(x + 5)(x - 9)$
B) $(x - 45)(x + 1)$
C) Prime
D) $(x - 5)(x + 9)$

Answer: C

132) $x^2 + 53x + 54$

A) $(x - 9)(x + 6)$
B) $(x + 54)(x - 1)$
C) $(x + 9)(x - 6)$
D) Prime

Answer: D

133) $5x^2 - 5x - 30$

A) Prime
B) $5(x + 2)(x - 3)$
C) $5(x - 2)(x + 3)$
D) $(5x + 10)(x - 3)$

Answer: B

134) $2x^2 - 20x + 50$

A) $2(x - 5)(x - 5)$
B) $(x - 5)(2x - 10)$
C) $(2x - 10)(x - 5)$
D) $2(x - 25)(x + 1)$

Answer: A

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135) $8x^2 + 18x + 9$

A) $(4x - 3)(2x - 3)$
B) Prime
C) $(4x + 3)(2x + 3)$
D) $(8x + 3)(x + 3)$

Answer: C

136) $16y^2 + 24y + 9$

A) Prime
B) $(16y + 3)(y + 3)$
C) $(4y - 3)(4y - 3)$
D) $(4y + 3)(4y + 3)$

Answer: D

137) $15z^2 + 14z - 8$

A) Prime
B) $(3z - 4)(5z + 2)$
C) $(3z + 4)(5z - 2)$
D) $(15z + 4)(z - 2)$

Answer: C

138) $6z^2 + 5z - 6$

A) $(6z - 2)(z + 3)$
B) Prime
C) $(3z + 2)(2z - 3)$
D) $(3z - 2)(2z + 3)$

Answer: D

139) $x^2 + 15xy + 56y^2$

A) $(x - 7y)(x + 8y)$
B) Prime
C) $(x - 7y)(x + y)$
D) $(x + 7y)(x + 8y)$

Answer: D

140) $u^2 - 3uv - 18v^2$

A) $(u + 3v)(u - 6v)$
B) $(u - 3v)(u + 6v)$
C) Prime
D) $(u - 3v)(u + v)$

Answer: A

141) $x^2 + 6xy - 160y^2$

A) $(x - 16y)(x + 10y)$
B) $(x + 16y)(x - 10y)$
C) Prime
D) $(x - 16y)(x + y)$

Answer: B

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142) $4x^2 - 12xy - 16y^2$

A) $4(x + y)(x - 4y)$
B) Prime
C) $4(x - y)(x + 4y)$
D) $(4x - 4y)(x + 4y)$

Answer: A

143) $5x^3 + 10x^2y - 40xy^2$

A) $(x - 2y)(5x^2 + 20xy)$
B) $(5x^2 + 10xy)(x - 4y)$
C) $5x(x + 2y)(x - 4y)$
D) $5x(x - 2y)(x + 4y)$
E) Prime

Answer: D

144) $x^3y - 9x^2y^2 + 20xy^3$

A) $xy(x^2 - 9x + 20y^2)$
B) $xy(x - 5y)(x - 4y)$
C) $x(xy - 5y^2)(x - 4y)$
D) $y(x - 5y)(xy - 4y^2)$

Answer: B

145) $12x^2 + 25xt + 12t^2$

A) $(3x + 4t)(4x + 3t)$
B) $(12x + 4t)(x + 3t)$
C) Prime
D) $(3x - 4t)(4x - 3t)$

Answer: A

146) $9x^2 - 3xt - 2t^2$

A) $(3x - t)(3x + 2t)$
B) $(9x + t)(x - 2t)$
C) $(3x + t)(3x - 2t)$
D) Prime

Answer: C

147) $9x^2 - 25$

A) Prime
B) $(3x + 5)(3x - 5)$
C) $(3x - 5)^2$
D) $(3x + 5)^2$

Answer: B

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148) $4x^2 + 9$

A) $(2x - 3)^2$
B) $(2x + 3)(2x - 3)$
C) $(2x + 3)^2$
D) Prime

Answer: D

149) $x^2 + 40x + 400$

A) Prime
B) $(x + 20)^2$
C) $(x - 20)^2$
D) $(x + 20)(x - 20)$

Answer: B

150) $x^2 - 16xy + 64y^2$

A) Prime
B) $(x + 8y)^2$
C) $(x - 8y)^2$
D) $(x - 8y)(x + 8y)$

Answer: C

151) $49x^2 - 112x + 64$

A) $(7x + 8)^2$
B) Prime
C) $(7x - 8)^2$
D) $(7x - 8)(7x + 8)$

Answer: C

152) $343x^2 + 294x + 63$

A) $7(49x^2 + 42x + 9)$
B) $7(7x + 3)^2$
C) $7(7x - 3)(7x + 3)$
D) $(49x + 21)(7x + 3)$

Answer: B

153) $343x^2 - 490xy + 175y^2$

A) $(49x - 35y)(7x - 5y)$
B) $7(49x^2 - 70xy + 25y)$
C) $7(7x + 5y)(7x - 5y)$
D) $7(7x - 5y)^2$

Answer: D

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154) $-75x^3 + 40x^2 + 80x$

A) $-5x(5x + 4)(3x - 4)$

B) $x(-25x - 20)(3x - 4)$

C) $-5(5x^2 + 4)(3x - 4)$

D) $x(5x + 4)(-15x + 20)$

Answer: A

155) $5x^3 + 5x^2y - 100xy^2$

A) $(5x^2 + 20xy)(x - 5y)$

B) $(x - 4y)(5x^2 + 25xy)$

C) $5x(x + 4y)(x - 5y)$

D) $5x(x - 4y)(x + 5y)$

Answer: D

156) $8x^2 - 28x - 16$

A) $(8x - 4)(x + 4)$

B) $(2x - 1)(4x + 16)$

C) $4(2x + 1)(x - 4)$

D) $4(2x - 1)(x + 4)$

Answer: C

157) $729p^3 - 1$

A) $(9p - 1)(81p^2 + 9p + 1)$

B) $(729p - 1)(p^2 + 9p + 1)$

C) $(9p + 1)(81p^2 - 9p + 1)$

D) $(9p - 1)(81p^2 + 1)$

Answer: A

158) $x^3 - 8$

A) $(x + 8)(x^2 - 1)$

B) $(x + 2)(x^2 - 2x + 4)$

C) $(x - 2)(x^2 + 4)$

D) $(x - 2)(x^2 + 2x + 4)$

Answer: D

159) $343y^3 - 512$

A) $(7y - 8)(49y^2 + 64)$

B) $(343y - 8)(y^2 + 56y + 64)$

C) $(7y + 8)(49y^2 - 56y + 64)$

D) $(7y - 8)(49y^2 + 56y + 64)$

Answer: D

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160) $27a^3 - 125b^3$

A) $(3a - 5b)(9a^2 + 25b^2)$

B) $(27a - 5b)(a^2 + 15ab + 25b^2)$

C) $(3a + 5b^2)(9a^2 - 15ab + 25b^2)$

D) $(3a - 5b)(9a^2 + 15ab + 25b^2)$

Answer: D

161) $250k^3m - 16m^4$

A) $2m(125k - 2m)(k^2 + 10km + 4m^2)$

B) $(10km - 4m^2)(25k^2 + 4m^2)$

C) $2m(5k + 2m^2)(25k^2 - 10km + 4km^2)$

D) $2m(5k - 2m)(25k^2 + 10km + 4m^2)$

Answer: D

162) $216s^3 + 1$

A) $(6s + 1)(36s^2 - 6s + 1)$

B) $(216s + 1)(s^2 - 6s + 1)$

C) $(6s - 1)(36s^2 + 6s + 1)$

D) $(6s + 1)(36s^2 + 1)$

Answer: A

163) $t^3 + 27$

A) $(t - 27)(t^2 - 1)$

B) $(t - 3)(t^2 + 3t + 9)$

C) $(t + 3)(t^2 + 9)$

D) $(t + 3)(t^2 - 3t + 9)$

Answer: D

164) $64c^3 + 729$

A) $(4c - 9)(16c^2 + 36c + 81)$

B) $(64c + 9)(c^2 - 36c + 81)$

C) $(4c + 9)(16c^2 - 36c + 81)$

D) $(4c + 9)(16c^2 + 81)$

Answer: C

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

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

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101) B
102) D
103) B
104) D
105) D
106) D
107) C
108) D
109) D
110) C
111) D
112) D
113) C
114) A
115) C
116) A
117) B
118) D
119) B
120) B
121) D
122) D
123) A
124) C
125) A
126) B
127) B
128) B
129) D
130) C
131) C
132) D
133) B
134) A
135) C
136) D
137) C
138) D
139) D
140) A
141) B
142) A
143) D
144) B
145) A
146) C
147) B
148) D
149) B
150) C

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151) C
152) B
153) D
154) A
155) D
156) C
157) A
158) D
159) D
160) D
161) D
162) A
163) D
164) C

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

Write the expression in lowest terms.

1) $\frac{(y+2)(y-6)}{(y-6)(y+7)}$

A) $\frac{y+2}{y+7}$

B) $\frac{y-2}{y-7}$

C) $\frac{y+6}{y+1}$

D) $\frac{2y-6}{2y+1}$

Answer: A

2) $\frac{6k^3}{3k}$

A) $2k$

B) $2k^2$

C) $3k^2$

D) 3

Answer: B

3) $\frac{a^2-4a}{(a+2)(a-4)}$

A) $\frac{a}{a+2}$

B) $\frac{1}{a+2}$

C) $\frac{a-4}{a+2}$

D) $\frac{a^2}{a+2}$

Answer: A

4) $\frac{3x+3}{15x^2+21x+6}$

A) $\frac{3x+5}{5x+21}$

B) $\frac{3x+3}{15x^2+21x+6}$

C) $\frac{1}{5x+2}$

D) $\frac{3x}{5x+2}$

Answer: C

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5) $\frac{y^2 + 7y + 10}{y^2 + 13y + 40}$

A) $\frac{y + 2}{y + 8}$

B) $-\frac{y^2 + 7y + 10}{y^2 + 13y + 40}$

C) $\frac{7y + 10}{13y + 40}$

D) $\frac{7y + 1}{13y + 4}$

Answer: A

6) $\frac{y^2 - 2y - 15}{y^2 + 3y - 40}$

A) $\frac{-2y - 15}{3y - 40}$

B) $\frac{-2y - 3}{3y - 8}$

C) $\frac{y + 3}{y + 8}$

D) $-\frac{y^2 - 2y - 15}{y^2 + 3y - 40}$

Answer: C

7) $\frac{y^2 + 4y - 21}{y^2 + 2y - 35}$

A) $\frac{y - 3}{y - 5}$

B) $\frac{4y - 3}{2y - 5}$

C) $-\frac{y^2 + 4y - 21}{y^2 + 2y - 35}$

D) $\frac{4y - 21}{2y - 35}$

Answer: A

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8) $\frac{4x + 8}{3x^2 + 10x + 8}$

A) $\frac{4x}{3x + 4}$

B) $\frac{4}{3x + 4}$

C) $\frac{4x + 8}{3x^2 + 10x + 8}$

D) $\frac{4x + 3}{3x + 10}$

Answer: B

9) $\frac{3k - 15}{30 - 6k}$

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

B) 1

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

D) - 1

Answer: A

10) $\frac{(y + 8)(5 - y)}{(-y + 5)(8 + y)}$

A) 1

B) - y

C) 0

D) - 1

Answer: A

Perform the indicated operation. Give the answer in lowest terms.

11) $\frac{4x^2}{5} \cdot \frac{35}{x^3}$

A) $\frac{x}{28}$

B) $\frac{140x^2}{5x^3}$

C) $\frac{28x^2}{x^3}$

D) $\frac{28}{x}$

Answer: D

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12) $\frac{3p - 3}{p} \cdot \frac{5p^2}{8p - 8}$

A) $\frac{8}{15p}$

B) $\frac{24p^2 + 48p + 24}{5p^3}$

C) $\frac{15p^3 - 15p^2}{8p^2 - 8p}$

D) $\frac{15p}{8}$

Answer: D

13) $\frac{2z^3}{3} \cdot \frac{9}{z^2}$

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

B) $\frac{6z^2}{z^3}$

C) $\frac{z}{6}$

D) 6z

Answer: D

14) $\frac{k^2 + 10k + 24}{k^2 + 13k + 42} \cdot \frac{k^2 + 7k}{k^2 + 2k - 8}$

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

B) $\frac{k}{k - 2}$

C) $\frac{k^2 + 7k}{k - 2}$

D) $\frac{k}{k^2 + 13k + 42}$

Answer: B

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15) $\frac{k^2+7k+10}{k^2+10k+16} \cdot \frac{k^2+8k}{k^2+9k+20}$

A) $\frac{k}{k+4}$

B) $\frac{k}{k^2+10k+16}$

C) $\frac{k^2+8k}{k+4}$

D) $\frac{1}{k+4}$

Answer: A

16) $\frac{k^2+8k+15}{k^2+11k+30} \cdot \frac{k^2+12k+36}{k^2+9k+18}$

A) $\frac{k+6}{k+6}$

B) $\frac{1}{k+6}$

C) $\frac{k+3}{k+6}$

D) 1

Answer: D

17) $\frac{2x^2}{3} \div \frac{x^3}{9}$

A) $\frac{6x^2}{x^3}$

B) $\frac{18x^2}{3x^3}$

C) $\frac{6}{x}$

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

Answer: C

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18) $\frac{3p - 3}{p} \div \frac{10p - 10}{9p^2}$

A) $\frac{27p}{10}$

B) $\frac{27p^3 - 27p^2}{10p^2 - 10p}$

C) $\frac{10}{27p}$

D) $\frac{30p^2 + 60p + 30}{9p^3}$

Answer: A

19) $\frac{z^2 + 12z + 27}{z^2 + 16z + 63} \div \frac{z^2 + 3z}{z^2 + 14z + 49}$

A) $\frac{z + 7}{z^2 + 7z}$

B) $\frac{z + 7}{z}$

C) $\frac{z}{z^2 + 16z + 63}$

D) $z + 7$

Answer: B

20) $\frac{z^2 + 11z + 30}{z^2 + 15z + 54} \div \frac{z^2 + 5z}{z^2 + 6z - 27}$

A) $\frac{z - 3}{z}$

B) $\frac{z}{z^2 + 15z + 54}$

C) $z - 3$

D) $\frac{z - 3}{z^2 + 9z}$

Answer: A

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Perform the indicated operations. Give the answer in lowest terms.

21) $\frac{2}{r} + \frac{4}{r - 9}$

A) $\frac{6r - 18}{r(9 - r)}$

B) $\frac{18r - 6}{r(9 - r)}$

C) $\frac{6r - 18}{r(r - 9)}$

D) $\frac{18r - 6}{r(r - 9)}$

Answer: C

22) $\frac{2}{r} + \frac{3}{r + 6}$

A) $\frac{-12r - 5}{r(r + 6)}$

B) $\frac{5r + 12}{r(r + 6)}$

C) $\frac{-12r - 5}{r(-6 - r)}$

D) $\frac{5r + 12}{r(-6 - r)}$

Answer: B

23) $\frac{m + 8}{m^2 - 9m + 20} + \frac{2m - 3}{m^2 - 3m - 4}$

A) $\frac{3m^2 - 4m + 23}{(m - 4)(m - 5)(m + 1)}$

B) $3m + 5$

C) $\frac{3m^2 - 4m + 23}{(m + 4)(m + 5)(m - 1)}$

D) $\frac{3m + 5}{2m^2 - 12m + 16}$

Answer: A

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24) $\frac{2}{y^2 - 3y + 2} + \frac{6}{y^2 - 1}$

A) $\frac{24y - 10}{(y - 1)(y + 1)(y - 2)}$

B) $\frac{10y - 8}{(y - 1)(y + 1)(y - 2)}$

C) $\frac{8y - 10}{(y - 1)(y + 1)(y - 2)}$

D) $\frac{8y - 10}{(y - 1)(y - 2)}$

Answer: C

25) $\frac{x}{x^2 - 16} - \frac{6}{x^2 + 5x + 4}$

A) $\frac{x^2 - 5x + 24}{(x - 4)(x + 4)(x + 1)}$

B) $\frac{x^2 - 5}{(x - 4)(x + 4)(x + 1)}$

C) $\frac{x^2 - 5x + 24}{(x - 4)(x + 4)}$

D) $\frac{x^2 + 5x + 24}{(x - 4)(x + 4)(x + 1)}$

Answer: A

26) $\frac{6}{z^2} - \frac{4}{z}$

A) $\frac{2(2z - 3)}{z}$

B) $\frac{2(3 - 2z)}{z^2}$

C) $\frac{2(3z + 2)}{z^2}$

D) $\frac{2(3 + 2z)}{z^2}$

Answer: B

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27) $\frac{x}{7} + \frac{12}{11}$

A) $\frac{11x - 84}{84}$

B) $\frac{x + 12}{77}$

C) $\frac{11x + 84}{77}$

D) $\frac{x + 12}{18}$

Answer: C

28) $- \frac{1}{14} - \frac{9}{6x}$

A) $\frac{3x - 63}{42x}$

B) $\frac{-3x + 63}{42x}$

C) $\frac{-3x - 63}{42x}$

D) $\frac{-12}{42 - 6x}$

Answer: C

29) $\frac{2 - 2y}{30} - \frac{3 - 8y}{48}$

A) $\frac{-56y + 31}{240}$

B) $\frac{24y + 1}{240}$

C) $\frac{-56y + 1}{240}$

D) $\frac{24y + 31}{240}$

Answer: B

30) $\frac{6x + 7}{x} + \frac{2x + 9}{3x}$

A) $\frac{16x + 30}{3x}$

B) $\frac{20x + 30}{3x^2}$

C) $\frac{20x - 12}{3x}$

D) $\frac{20x + 30}{3x}$

Answer: D

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31) $\frac{4a + 6b}{2} - \frac{4a - 6b}{2}$

A) 36b
B) 4a
C) 0
D) 6b

Answer: D

32) $\frac{8x}{x + 7} + \frac{6x - 2}{x + 7} - \frac{5x}{x + 7}$

A) $\frac{19x + 2}{x - 7}$

B) $\frac{9x - 2}{3x + 21}$

C) $\frac{19x - 2}{x + 7}$

D) $\frac{9x - 2}{x + 7}$

Answer: D

33) $\frac{6x + 9}{x + 2} - \frac{5x + 3}{x + 2} - \frac{9x}{x + 2}$

A) $\frac{-8x + 6}{x + 2}$

B) $\frac{-20x + 12}{x + 2}$

C) $\frac{-8x + 6}{3x + 6}$

D) $\frac{x + 6}{x + 6}$

Answer: A

34) $\frac{b}{b^2 - 25} + \frac{5}{b + 5} - \frac{6}{b}$

A) $\frac{-25(b - 6)}{b(b + 5)(b - 5)}$

B) $\frac{25(b - 6)}{(b + 5)(b - 5)}$

C) $\frac{25(b + 6)}{b(b + 5)(b - 5)}$

D) $\frac{6b^2 - 25b + 150}{b(b + 5)(b - 5)}$

Answer: A

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35) $\frac{2}{3x - 6} - \frac{6}{5x + 5} + \frac{1}{2x + 4}$

A) $\frac{-1x^2 + 45x + 13}{10x + 15}$

B) $\frac{-1x^2 + 45x + 154}{30(x - 2)(x + 1)(x + 2)}$

C) $\frac{71x^2 + 45x + 154}{30(x - 2)(x + 1)(x + 2)}$

D) $\frac{71x^2 + 45x + 154}{10x + 15}$

Answer: B

36) $\frac{81x}{2(9x + 1)} - \frac{1}{2x(9x + 1)} + \frac{14}{x}$

A) $\frac{9(x + 3)}{2x}$

B) $\frac{81x^2 + 252x + 27}{2x}$

C) $\frac{81x^2 + 252x + 27}{18x2 + 2x}$

D) $\frac{9(x + 3)}{18x^2 + 2x}$

Answer: A

37) $\frac{-49x}{4(7x + 1)} + \frac{1}{4x(7x + 1)} - \frac{9}{x}$

A) $-\frac{7(x + 5)}{28x^2 + 4x}$

B) $\frac{-49x^2 - 252x - 35}{28x^2 + 4x}$

C) $\frac{-49x^2 - 252x - 35}{4x}$

D) $-\frac{7(x + 5)}{4x}$

Answer: D

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Simplify the complex fraction.

38) $\dfrac{\frac{1}{a}+1}{\frac{1}{a}-1}$

A) 1

B) $\dfrac{1+a}{1-a}$

C) $1-a^2$

D) $\dfrac{a}{1-a^2}$

Answer: B

39) $\dfrac{4+\frac{2}{x}}{\frac{x}{4}+\frac{1}{8}}$

A) $\dfrac{x}{16}$

B) 16

C) $\dfrac{16}{x}$

D) 1

Answer: C

40) $\dfrac{9+\frac{3}{s}}{\frac{s}{4}+\frac{1}{12}}$

A) 36

B) $\dfrac{s}{36}$

C) 1

D) $\dfrac{36}{s}$

Answer: D

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41) $\dfrac{\dfrac{x}{x+9}}{\dfrac{6}{x^2-81}}$

A) $\dfrac{6(x+9)}{x}$

B) $\dfrac{x(x+9)}{6}$

C) $\dfrac{6(x-9)}{x}$

D) $\dfrac{x(x-9)}{6}$

Answer: D

42) $\dfrac{\dfrac{4}{y-2}-3}{\dfrac{1}{y-2}+3}$

A) $\dfrac{-3y+10}{3y-5}$

B) $\dfrac{-3y-2}{3y-5}$

C) $\dfrac{3y-2}{3y-5}$

D) $\dfrac{3y-10}{3y-5}$

Answer: A

43) $\dfrac{\dfrac{1}{k+6}}{\dfrac{3}{k^2-36}}$

A) $k-6$

B) $\dfrac{k+6}{3}$

C) $\dfrac{3}{k-6}$

D) $\dfrac{k-6}{3}$

Answer: D

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44) $\dfrac{\dfrac{5}{4r - 1} - 5}{\dfrac{5}{4r - 1} + 5}$

A) $\dfrac{4r}{2 - 4r}$

B) $\dfrac{2 + 4r}{4r}$

C) $\dfrac{2 - 4r}{4r}$

D) $\dfrac{2 - r}{r}$

Answer: C

45) $\dfrac{\dfrac{3}{x - 3} + \dfrac{5}{x + 5}}{\dfrac{5}{x + 5} - \dfrac{3}{x - 2}}$

A) $\dfrac{8x^2 - 16x}{2x^2 - 31x + 75}$

B) $\dfrac{8x^2 - 16x}{8x^2 - 23x + 75}$

C) $\dfrac{-(x - 2)}{x - 3}$

D) $\dfrac{8x^2 + 46 + 60}{8x^2 + 49x + 75}$

Answer: A

46) $\dfrac{\dfrac{3}{x + 5} + \dfrac{4}{x - 2}}{\dfrac{5}{x - 1} - \dfrac{1}{x + 5}}$

A) $\dfrac{3x - 30}{9x + 10}$

B) $\dfrac{7x^2 + 7x - 14}{4x^2 + 18x - 52}$

C) $\dfrac{7x^2 - 33x + 26}{-4x^2 + 4x - 52}$

D) $\dfrac{7x^2 + 7x - 14}{6x^2 - 37x + 8}$

Answer: B

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Solve the problem.

47) If the average cost per unit C to produce x units of plywood is given by $C = \frac{1{,}200}{x + 40}$, what is the unit cost for 50 units?

A) $13.33
B) $0.60
C) $24.00
D) - $16.00

Answer: A

48) The cost of producing x thousand units of a certain product is given by $C = -5.5x^2 + 4{,}595x + 190{,}000$, for $x \le 150$. Write a rational expression that gives the average cost per unit when x thousand are produced. Then find the average cost per unit when 50,000 units are produced.

A) $\frac{-5.5x^2 + 4{,}595x + 190{,}000}{x}$; $8,120.00

B) $\frac{-5.5x^2 + 4{,}595x + 190{,}000}{1000x}$; $8.12

C) $\frac{-5.5x^2 + 4{,}595x + 190{,}000}{x}$; $8.12

D) $\frac{-5.5x^2 + 4{,}595x + 190{,}000}{1000x}$; $266.61

Answer: B

Evaluate the expression. Write answer without exponents.

49) 11^0

A) 0
B) 11
C) 1
D) - 1

Answer: C

50) -8^0

A) 1
B) - 8
C) - 1
D) 0

Answer: C

51) $(-2)^0$

A) - 1
B) - 2
C) 0
D) 1

Answer: D

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52) 2^{-4}

A) 16

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

C) - 16

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

Answer: B

53) -2^{-1}

A) - 2

B) 2

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

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

Answer: D

54) $\left(\frac{1}{5}\right)^{-3}$

A) $\frac{3}{5}$

B) $\frac{1}{-15}$

C) 0.01

D) 125

Answer: D

55) $(7.16)^{-4}$

A) 28.64

B) 0.00038

C) 2,628.16174

D) 1.63579

Answer: B

56) $(13.4)^{-2}$

A) 3.6606

B) 179.56

C) 26.8

D) 0.00557

Answer: D

57) $100^{1/2}$

A) 5

B) 20

C) 40

D) 10

Answer: D

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58) $16^{1/4}$

A) 32
B) 2
C) 8
D) 16

Answer: B

59) $-32^{1/5}$

A) 32
B) - 2
C) 16
D) - 8

Answer: B

60) $\left(\frac{9}{16}\right)^{1/2}$

A) $\frac{2}{4}$

B) $\frac{3}{5}$

C) $\frac{2}{5}$

D) $\frac{3}{4}$

Answer: D

61) $27^{4/3}$

A) 729
B) 243
C) 81
D) 2,187

Answer: C

62) $243^{4/5}$

A) 6,561
B) 19,683
C) 81
D) 2,187

Answer: C

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63) $\left(\frac{1}{27}\right)^{2/3}$

A) $-\frac{1}{9}$

B) $\frac{1}{13}$

C) $\frac{1}{9}$

D) $\frac{1}{4}$

Answer: C

64) $(10.48)^{1/3}$

A) 31.44

B) 2.18837

C) 0.00087

D) 1,151.02259

Answer: B

65) $\left(\frac{27}{8}\right)^{-2/3}$

A) $\frac{4}{13}$

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

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

D) $\frac{3}{4}$

Answer: B

Simplify the expression. Write answer with positive exponents.

66) $\frac{2^{11}}{2^5}$

A) 2^{-2}

B) $\frac{1}{2^6}$

C) 2^6

D) 2^{16}

Answer: C

67) $\frac{4^{-11}}{4^{9}}$

A) $\frac{1}{4^{17}}$

B) $\frac{1}{4^{20}}$

C) $\frac{1}{4^{-20}}$

D) $\frac{1}{4^{2}}$

Answer: B

68) $\frac{81^{6}}{9^{6}}$

A) $\frac{1}{9^{6}}$

B) 9

C) 9^{6}

D) 9^{12}

Answer: C

69) $\frac{243^{5} \cdot 3^{-3}}{27^{5}}$

A) 9^{7}

B) 3^{7}

C) 3^{5}

D) 1

Answer: B

70) $7^{-4} \cdot 7^{7}$

A) 7^{3}

B) 49^{28}

C) 49^{3}

D) 7^{-28}

Answer: A

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71) $\frac{4^5}{4^2}$

A) 4^7

B) 4^3

C) $\frac{1}{4^3}$

D) $\frac{1}{4^7}$

Answer: B

72) $\frac{5^{-1}}{5^9}$

A) 5^8

B) $\frac{1}{5^8}$

C) 5^{10}

D) $\frac{1}{5^{10}}$

Answer: D

73) $\frac{4^3}{4^{-8}}$

A) 4^5

B) $\frac{1}{4^{11}}$

C) 4^{11}

D) $\frac{1}{4^5}$

Answer: C

74) $\frac{6^{-7}}{6^{-5}}$

A) 6^{12}

B) 6^2

C) $\frac{1}{6^2}$

D) $\frac{1}{6^{12}}$

Answer: C

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75) $\frac{3^{-9}}{3^{-7}}$

A) 3^2

B) -3^2

C) 3^{-2}

D) $\frac{1}{3^2}$

Answer: D

Simplify the expression. Write answer with positive exponents. Variables are positive real numbers.

76) $x^{1/6}x^{5/6}$

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

B) $x^{5/6}$

C) $x^{5/36}$

D) x

Answer: D

77) $\frac{y^{9/8}}{y^{5/8}}$

A) $y^{9/8}$

B) y

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

D) $y^{1/2}$

Answer: D

78) $(b^5)^{3/5}$

A) $b^{8/5}$

B) b^3

C) $b^{3/25}$

D) $b^{1/5}$

Answer: B

79) $z^{-2/7}z^{3/7}$

A) $z^{1/7}$

B) $z^{6/7}$

C) $z^{-1/7}$

D) $z^{7/6}$

Answer: A

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80) $\left[\frac{x^4}{y^{-8}}\right]^{1/4}$

A) $\frac{x}{y^2}$

B) xy^2

C) $xy^{1/2}$

D) xy

Answer: B

81) $(16k^4m^{-8})^{1/4}$

A) $\frac{4k}{m^2}$

B) $2km^2$

C) $4km^2$

D) $\frac{2k}{m^2}$

Answer: D

82) $\left(\frac{n^{-2/5}}{r^{-5/4}}\right)^4 (n^{-1/8}r^{-1/6})^{-2}$

A) $\frac{r^{16/3}}{n^{27/20}}$

B) $\frac{n^{27/20}}{r^{16/3}}$

C) $\frac{r^{14/3}}{n^{37/20}}$

D) $\frac{n^{37/20}}{r^{14/3}}$

Answer: A

83) $\left(\frac{t^{-5/7}}{r^{-4/5}}\right)^4 (t^{-1/8}r^{1/6})^{-2}$

A) $\frac{t^{73/28}}{r^{43/15}}$

B) $\frac{r^{53/15}}{t^{87/28}}$

C) $\frac{t^{87/28}}{r^{53/15}}$

D) $\frac{r^{43/15}}{t^{73/28}}$

Answer: D

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84) $y^{2/9}(y^{5/9} - 4y^{4/9})$

A) $y^{7/9} - 4y^{2/3}$

B) $y^{2/5} - 4y^{1/2}$

C) $y^{10/81} - 4y^{8/81}$

D) $y^{-1/3} - 4y^{-2/9}$

Answer: A

85) $-6k^{1/7}(-9k^{4/7} + 8k^{5/7})$

A) $54k^{5/7} - 48k^{6/7}$

B) $-15k^{5/7} - 14k^{6/7}$

C) $54k^{-3/7} + 48k^{-4/7}$

D) $54k^{5/7} + 48k^{6/7}$

Answer: A

Write the rational exponent expression as an equivalent radical expression.

86) $(-7x)^{1/7}$

A) $\sqrt[7]{7x}$

B) $\dfrac{7}{\sqrt[7]{x}}$

C) $\sqrt[7]{-7x}$

D) $-7\sqrt[7]{x}$

Answer: C

87) $-5x^{1/5}$

A) $\sqrt[5]{5x}$

B) $-5\sqrt[5]{x}$

C) $\sqrt[5]{-5x}$

D) $\dfrac{5}{\sqrt[5]{x}}$

Answer: B

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88) $(-3x)^{-1/3}$

A) $3\sqrt[3]{x}$

B) $\dfrac{1}{\sqrt[3]{-3x}}$

C) $\dfrac{-3}{\sqrt[3]{x}}$

D) $\dfrac{1}{\sqrt[3]{3x}}$

Answer: B

89) $-5x^{-1/5}$

A) $\dfrac{1}{\sqrt[5]{-5x}}$

B) $\dfrac{1}{\sqrt[5]{5x}}$

C) $\dfrac{-5}{\sqrt[5]{x}}$

D) $5\sqrt[5]{x}$

Answer: C

90) $(3x)^{1/3}$

A) $\dfrac{3}{\sqrt[3]{x}}$

B) $-3\sqrt[3]{x}$

C) $\sqrt[3]{-3x}$

D) $\sqrt[3]{3x}$

Answer: D

91) $7x^{-1/7}$

A) $\sqrt[7]{-7x}$

B) $-7\sqrt[7]{x}$

C) $\sqrt[7]{7x}$

D) $\dfrac{7}{\sqrt[7]{x}}$

Answer: D

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92) $(7x)^{-1/7}$

A) $7\sqrt[7]{x}$

B) $\dfrac{1}{\sqrt[7]{-7x}}$

C) $\dfrac{1}{\sqrt[7]{7x}}$

D) $\dfrac{-7}{\sqrt[7]{x}}$

Answer: C

93) $7x^{-1/7}$

A) $\dfrac{-7}{\sqrt[7]{x}}$

B) $\dfrac{1}{\sqrt[7]{7x}}$

C) $\dfrac{7}{\sqrt[7]{x}}$

D) $\dfrac{1}{\sqrt[7]{-7x}}$

Answer: C

Simplify the expression.

94) $\sqrt[3]{3^6}$

A) 9

B) 3

C) $\sqrt[3]{3^6}$

D) 27

Answer: A

95) $\sqrt{13} \cdot \sqrt{12}$

A) $4\sqrt{39}$

B) $2\sqrt{39}$

C) $\sqrt{25}$

D) 25

Answer: B

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96) $\sqrt[3]{8} \cdot \sqrt[3]{216}$

A) - 12

B) 12

C) - 4

D) 8

Answer: B

97) $\sqrt[4]{12} \cdot \sqrt[4]{12}$

A) $2\sqrt[4]{9}$

B) $\sqrt[4]{144}$

C) $4\sqrt{2}$

D) $2\sqrt[4]{3} + 2\sqrt[4]{3}$

Answer: A

98) $\sqrt[3]{-343}$

A) - 7

B) - 49

C) 49

D) 7

Answer: A

99) $\sqrt{6}(\sqrt{150} - \sqrt{96})$

A) 6

B) $6\sqrt{5} - 24$

C) $36 - 6\sqrt{3}$

D) 54

Answer: A

100) $(\sqrt{6} + 1)(\sqrt{6} - 1)$

A) $5 + 2\sqrt{6}$

B) 7

C) 5

D) $5 - 2\sqrt{6}$

Answer: C

101) $(\sqrt{7} + 3)(\sqrt{2} + 3)$

A) $\sqrt{14} + 3\sqrt{7} + 3\sqrt{2} + 9$

B) $\sqrt{14} + 9$

C) $7\sqrt{14} + 9$

D) $\sqrt{14} + 6\sqrt{2} + 9$

Answer: A

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102) $\sqrt{81 - 4}$

A) $\sqrt{77}$

B) 79

C) $\sqrt{79}$

D) 77

Answer: A

103) $\sqrt{81} - \sqrt{4}$

A) 77

B) 79

C) 11

D) 7

Answer: D

Rationalize the denominator. Assume all variables represent positive real numbers.

104) $\frac{3}{7 - \sqrt{6}}$

A) $\frac{21 + 3\sqrt{6}}{43}$

B) $\frac{21 + 3\sqrt{6}}{-1}$

C) $\frac{21 - 3\sqrt{6}}{43}$

D) $\frac{3}{7} - \frac{3}{\sqrt{6}}$

Answer: A

105) $\frac{\sqrt{5}}{\sqrt{7} + 9}$

A) $\frac{\sqrt{35} + 9\sqrt{5}}{-74}$

B) $\frac{\sqrt{35} - 9\sqrt{5}}{16}$

C) $\frac{3\sqrt{35} + 75}{63}$

D) $\frac{\sqrt{35} - 9\sqrt{5}}{-74}$

Answer: D

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106) $\frac{10 - \sqrt{3}}{10 + \sqrt{3}}$

A) $\frac{103 - 20\sqrt{3}}{97}$

B) 1

C) $\frac{97 - 20\sqrt{3}}{103}$

D) $\frac{103 + 20\sqrt{3}}{97}$

Answer: A

107) $\frac{\sqrt{2}}{2\sqrt{7} - \sqrt{2}}$

A) $\frac{1}{13}(\sqrt{7} + 1)$

B) $\frac{1}{13}(\sqrt{14} - 1)$

C) $\frac{1}{13}(\sqrt{14} + 1)$

D) $\frac{1}{15}(\sqrt{14} + 1)$

Answer: C

Solve the problem.

108) A manufacturer's cost is given by $C = 200\sqrt[3]{n} + 200$, where C is the cost and n is the number of parts produced. Find the cost when 343 parts are produced.

A) $3,904
B) $900
C) $1,600
D) $29

Answer: C

109) A manufacturer's cost is given by $C = 300\sqrt[3]{n} + 200$, where C is the cost and n is the number of parts produced. How many parts are produced when the cost is $5,900?

A) 6,859
B) 5,700
C) 54,872
D) 361

Answer: A

110) The distance d in miles that can be seen on the surface of the ocean is given by $d = 1.6\sqrt{h}$, where h is the height in feet above the surface. How high (to the nearest foot) would a platform have to be to see a distance of 16.5 miles?

A) 435 ft
B) 106 ft
C) 272 ft
D) 103 ft

Answer: B

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111) The time T in seconds for a pendulum of length L feet to make one swing is given by $T = 2\pi\sqrt{\frac{L}{44}}$. How long is a pendulum (to nearest hundredth) if it makes one swing in 1.3 seconds? Use 3.14 for π.

A) 18.59 ft
B) 74.36 ft
C) 1.89 ft
D) 11.84 ft

Answer: C

112) The radius of a sphere depends on its surface area, S, and is given by the formula $r = \sqrt{\frac{S}{4\pi}}$.

What is the surface area of a sphere with radius of 9 inches?
Use 3.14 for π.

A) 1,017.4 square inches
B) 113 square inches
C) 254.3 square inches
D) 28.3 square inches

Answer: A

113) The length a spring is stretched from its natural length with work, W foot- pounds, is given by

$L = \sqrt{\frac{2W}{k}}$

where k is a constant for the given spring. If a certain spring has a constant of 38.0, and the spring is to be stretched 3.5 feet from its natural length, how much work will be necessary?

A) 66.5 foot- pounds
B) 35.5 foot- pounds
C) 465.5 foot- pounds
D) 232.8 foot- pounds

Answer: D

Solve the equation.

114) $12x - 4 = 10$

A) $\frac{13}{12}$

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

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

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

Answer: B

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115) $56s + 35 = 11s$

A) $\frac{7}{9}$

B) $\frac{9}{7}$

C) $\frac{35}{67}$

D) $-\frac{7}{9}$

Answer: D

116) $18t + 5 = 6t + 14$

A) $\frac{8}{3}$

B) $-\frac{3}{4}$

C) $\frac{24}{19}$

D) $\frac{3}{4}$

Answer: D

117) $14b + 10 = 6b$

A) $\frac{5}{4}$

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

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

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

Answer: D

118) $-5x + 9 - 4x = -4x + 49$

A) 8

B) $-\frac{1}{8}$

C) $-\frac{13}{40}$

D) - 8

Answer: D

119) $-6.0y = 58.80$

A) - 52.80

B) 64.80

C) 9.8

D) - 9.8

Answer: D

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120) - 4.5q = - 7 - 1.0q

A) 2

B) 1.6

C) - 10

D) 1.8

Answer: A

121) - 6.4q + 1.1 = - 23.9 - 1.4q

A) 3.9

B) - 30

C) 5

D) 4.1

Answer: C

122) - 3 = y + 2.6

A) 0.4

B) - 0.4

C) - 5.6

D) 5.6

Answer: C

123) - 9.6 = z - 6.3

A) - 3.3

B) - 15.9

C) 3.3

D) 15.9

Answer: A

124) 12(8c - 3) = 7c - 2

A) $\frac{34}{89}$

B) $-\frac{34}{89}$

C) $\frac{38}{89}$

D) $\frac{34}{103}$

Answer: A

125) 3(4r - 1) = 6

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

B) $\frac{5}{4}$

C) $\frac{3}{4}$

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

Answer: C

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126) $5(y + 7) = 6(y - 4)$

A) - 11
B) - 59
C) 59
D) 11

Answer: C

127) $2(2z - 2) = 3(z + 4)$

A) - 8
B) 8
C) 10
D) 16

Answer: D

128) $\frac{p}{4} - \frac{3p}{8} = 2$

A) 16
B) - 14
C) - 16
D) 14

Answer: C

129) $\frac{r + 6}{3} = \frac{r + 8}{6}$

A) 4
B) - 12
C) 3
D) - 4

Answer: D

130) $\frac{a}{4} - \frac{1}{4} = - 6$

A) 25
B) - 25
C) - 23
D) 23

Answer: C

131) $\frac{y}{6} + 8 = 10$

A) - 12
B) - 14
C) 14
D) 12

Answer: D

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132) $\frac{b}{9} - 6 = -4$

A) - 18
B) - 20
C) 18
D) 20

Answer: C

133) $\frac{-2x+7}{7} + \frac{9}{7} = -\frac{5x}{4}$

A) $\frac{64}{43}$

B) $-\frac{8}{27}$

C) $-\frac{64}{27}$

D) $\frac{8}{27}$

Answer: C

134) $\frac{2}{t} = \frac{t}{-4t-6}$

A) $\varnothing$
B) 0, 36
C) - 2, - 6
D) $0, \frac{6}{4}$

Answer: C

135) $\frac{28}{x-2} = 1 + \frac{30}{x+2}$

A) - 30, 12
B) $\varnothing$
C) - 10, 12
D) 10, - 12

Answer: D

136) $\frac{2y+3}{y} = \frac{3}{2}$

A) 0
B) 6
C) - 6
D) $\sqrt{2}$

Answer: C

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137) $1 - \frac{3}{2x} = \frac{7}{4}$

A) -2

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

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

D) 2

Answer: A

138) $\frac{5 - a}{a} + \frac{3}{4} = \frac{7}{a}$

A) -4

B) 8

C) $\sqrt{\frac{29}{20}}$

D) -8

Answer: D

139) $\frac{8}{x} + \frac{3}{4} = 1$

A) 4

B) $\frac{11}{4}$

C) 11

D) 32

Answer: D

140) $\frac{-9}{x - 8} - \frac{-3}{x - 5} = 0$

A) $\frac{7}{2}$

B) $-\frac{1}{8}, -\frac{1}{5}$

C) $-\frac{23}{4}$

D) 8, 5

Answer: A

141) $\frac{x}{2x + 2} - \frac{-2x}{4x + 4} - \frac{2x - 3}{x + 1} = 0$

A) -3

B) $-\frac{12}{5}$

C) 3

D) $\frac{3}{2}$

Answer: C

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Use a calculator to solve the equation. Round to the nearest hundredth.

142) $-4.99a + 3.23 + 5.99a = 5.56 - 28.01$

A) 36.80
B) - 36.80
C) - 25.68
D) 25.68

Answer: C

143) $-0.07(4.5 + 4.3x) = 1.23x + 3.5667$

A) 4.18
B) 3.50
C) - 2.54
D) - 2.12

Answer: C

144) $\frac{3.63x - 4.07}{3.12} - \frac{2.87x - 3.15}{1.21} = x$

A) 0.31
B) 0.59
C) 0.09
D) - 0.20

Answer: B

145) $1.26x + 4.91(2.4 + 4.5x) = 3.82x + 4.5345$

A) 0.84
B) - 0.27
C) - 0.37
D) 0.60

Answer: C

146) $\frac{2.27x + 3.12}{1.11} - \frac{1.79x - 4.08}{3.69} = x$

A) - 0.12
B) 0.21
C) - 0.27
D) - 6.99

Answer: D

Solve the equation for x.

147) $5(x - a) + b = 6x + a$

A) $x = -6a + b$
B) $x = 5a + b$
C) $x = \frac{6a - b}{11}$
D) $x = 6a - b$

Answer: A

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148) $ax - b = 5(x + a)$

A) $x = \frac{5a + b}{a + 5}$

B) $x = \frac{5a - b}{a - 5}$

C) $x = \frac{a + b}{a - 5}$

D) $x = \frac{5a + b}{a - 5}$

Answer: D

149) $a^2x - 2x = 3a^2$

A) $x = \frac{3a^2}{a^2 + 2}$

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

C) $x = \frac{3a^2}{a^2 - 2}$

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

Answer: C

150) $x = (6x - 2)(3k + 1)$

A) $x = \frac{6k - 2}{18k + 5}$

B) $x = \frac{6k + 2}{18k + 7}$

C) $x = \frac{6k + 2}{18k + 5}$

D) $x = \frac{6k + 2}{18k - 5}$

Answer: C

151) $\frac{3a}{x + 1} = a - 6b$

A) $x = \frac{2a - 6b}{a - 6b}$

B) $x = \frac{4a + 6b}{a - 6b}$

C) $x = \frac{3a - 1}{a - 6b}$

D) $x = \frac{2a + 6b}{a - 6b}$

Answer: D

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152) $7x - (6a + 6) = a(x + 1)$

A) $x = \frac{5a + 6}{7 - a}$

B) $x = \frac{7a + 6}{7 - a}$

C) $x = \frac{7a - 6}{7 - a}$

D) $x = \frac{5a - 6}{7 - a}$

Answer: B

153) $8x + 1 = (2x - 1)(m + 4)$

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

B) $x = \frac{m + 3}{2m}$

C) $x = \frac{5 - m}{2m}$

D) $x = \frac{m + 5}{16 + 2m}$

Answer: A

Solve the formula for the specified variable.

154) $A = \frac{1}{2}bh$ for b

A) $b = \frac{A}{2h}$

B) $b = \frac{Ah}{2}$

C) $b = \frac{h}{2A}$

D) $b = \frac{2A}{h}$

Answer: D

155) $S = 2\pi rh + 2\pi r^2$ for h

A) $h = \frac{S}{2\pi r} - 1$

B) $h = S - r$

C) $h = 2\pi(S - r)$

D) $h = \frac{S - 2\pi r^2}{2\pi r}$

Answer: D

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156) $V = \frac{1}{3}Bh$ for h

A) $h = \frac{3B}{V}$

B) $h = \frac{3V}{B}$

C) $h = \frac{V}{3B}$

D) $h = \frac{B}{3V}$

Answer: B

157) $I = \frac{nE}{nr + R}$ for n

A) $n = IR(Ir - E)$

B) $n = \frac{IR}{Ir + E}$

C) $n = \frac{- IR}{Ir - E}$

D) $n = \frac{- R}{Ir - E}$

Answer: C

158) $P = s_1 + s_2 + s_3$ for s_1

A) $s_1 = s_2 + P - s_3$

B) $s_1 = s_2 + s_3 - P$

C) $s_1 = P - s_2 - s_3$

D) $s_1 = P + s_2 + s_3$

Answer: C

159) $F = \frac{9}{5}C + 32$ for C

A) $C = \frac{5}{F - 32}$

B) $C = \frac{F - 32}{9}$

C) $C = \frac{9}{5}(F - 32)$

D) $C = \frac{5}{9}(F - 32)$

Answer: D

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160) $A = \frac{1}{2}h(b_1 + b_2)$ for b_1

A) $b_1 = \frac{A - h(b_2)}{2h}$

B) $b_1 = \frac{(b_2)2A - h}{h}$

C) $b_1 = \frac{2A - (h)(b_2)}{h}$

D) $b_1 = \frac{h(b_2) - 2A}{h}$

Answer: C

161) $a + b = s + r$ for r

A) $r = s(a + b)$

B) $r = \frac{a}{s} + b$

C) $r = \frac{a + b}{s}$

D) $r = a + b - s$

Answer: D

162) $A = P(1 + nr)$ for r

A) $r = \frac{A - P}{Pn}$

B) $r = \frac{P - A}{Pn}$

C) $r = \frac{Pn}{A - P}$

D) $r = \frac{A}{n}$

Answer: A

Solve the equation.

163) $|2s + 4| = |s - 2|$

A) $-6, -\frac{2}{3}$

B) -6

C) $6, \frac{2}{3}$

D) No solution

Answer: A

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164) $|3s + 7| = |s + 5|$

A) -1

B) $-1, -3$

C) No solution

D) $1, 3$

Answer: B

165) $|2s - 8| = |s + 4|$

A) $12, -20$

B) $-12, -4$

C) $12, \frac{4}{3}$

D) No solution

Answer: C

166) $|6x + 3| = 5$

A) $2, -8$

B) $8, -2$

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

D) $\frac{1}{3}, -\frac{4}{3}$

Answer: D

167) $\left|\frac{5x + 1}{x - 1}\right| = 3$

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

B) $2, -8$

C) $-2, \frac{1}{4}$

D) $4, 2$

Answer: C

168) $\left|\frac{4}{y - 6}\right| = 3$

A) $9, 3$

B) $\frac{22}{3}, \frac{14}{3}$

C) $22, 14$

D) $-\frac{7}{2}, \frac{7}{2}$

Answer: B

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Solve the problem.

169) If Gloria received a 12 percent raise and is now making $22,400 a year, what was her salary before the raise?
A) $21,400
B) $20,000
C) $20,400
D) $21,000

Answer: B

170) On Monday, an investor bought 100 shares of stock. On Tuesday, the value of the shares went up 9%. How much did the investor pay for the 100 shares if he sold them Wednesday morning for $1,526?
A) $1,400
B) $1,663
C) $1,476
D) $1,450

Answer: A

171) Helen Weller invested $14,000 in an account that pays 10% simple interest. How much additional money must be invested in an account that pays 13% simple interest so that the average return on the two investments amounts to 11%?
A) $14,000
B) $7,000
C) $11,000
D) $10,000

Answer: B

172) Mardi received an inheritance of $70,000. She invested part at 11% and deposited the remainder in tax- free bonds at 9%. Her total annual income from the investments was $7,500. Find the amount invested at 11%.
A) $60,000
B) $30,000
C) $62,500
D) $59,000

Answer: A

173) Walt made an extra $9,000 last year from a part- time job. He invested part of the money at 8% and the rest at 7%. He made a total of $690 in interest. How much was invested at 7%?
A) $7,000
B) $4,500
C) $3,000
D) $6,000

Answer: C

174) At the end of the day, a storekeeper had $1,605 in the cash register, counting both the sale of goods and the sales tax of 7%. Find the amount of the tax.
A) $105
B) $100
C) $95
D) $110

Answer: A

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175) Roberto invested some money at 7%, and then invested $3,000 more than twice this amount at 10%. His total annual income from the two investments was $3,810. How much was invested at 10%?

A) $2,900
B) $9,000
C) $26,000
D) $29,000

Answer: D

176) The finance charge on a loan taken out by Jane is $749. If there were 36 equal monthly installments needed to repay the loan, and the loan is paid in full with 4 months remaining, find the amount of unearned interest. (Round answer to the nearest cent.)

A) $593.80
B) $11.25
C) $7.13
D) $589.69

Answer: B

177) The finance charge on a loan taken out by Ximena is $755. If there were 24 equal monthly installments needed to repay the loan, and the loan is paid in full with 6 months remaining, find the total finance charge paid. (Round answer to the nearest cent.)

A) $52.85
B) $702.15
C) $755.00
D) $430.35

Answer: B

178) The formula $A = \frac{24f}{b(p+1)}$ gives the approximate annual interest rate for a consumer loan paid off with monthly payments, where f is the finance charge on the loan, p is the number of payments, and b is the original amount of the loan. Find the approximate annual interest rate for an automobile loan to be repaid in 18 monthly installments if the finance charge on the loan is $680 and the original loan balance is $3,330. (Round answer to two decimal places.)

A) 27.22%
B) 22.75%
C) 25.79%
D) 28.83%

Answer: C

179) Jay drove 284 kilometers at the average rate of 71 kilometers per hour. How long did the trip take?

A) 4 hours
B) 3 hours
C) 2 hours
D) 5 hours

Answer: A

180) Janet drove 292 kilometers and the trip took 4 hours. How fast was Janet traveling?

A) 83 kilometers per hour
B) 63 kilometers per hour
C) 93 kilometers per hour
D) 73 kilometers per hour

Answer: D

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181) Jill is 9 kilometers away from Joe. Both begin to walk toward each other at the same time. Jill walks at 2 kilometers per hour. They meet in 2 hours. How fast is Joe walking?
A) 2 kilometers per hour
B) 4.5 kilometers per hour
C) 3.5 kilometers per hour
D) 2.5 kilometers per hour

Answer: D

182) Bert is 26 kilometers away from Brenda. Both begin to walk toward each other at the same time. Bert walks at 4.5 kilometers per hour. They meet in 4 hours. How fast is Brenda walking?
A) 4 kilometers per hour
B) 3 kilometers per hour
C) 4.5 kilometers per hour
D) 2 kilometers per hour

Answer: D

183) Candy and Delvis are riding bicycles in the same direction. Candy is traveling at the speed of 3 miles per hour, and Delvis is traveling at the speed of 12 miles per hour. In 4 hours what is the distance between them?
A) 37 miles
B) 36 miles
C) 45 miles
D) 33 miles

Answer: B

184) From a point on a river, two boats are driving in opposite directions, one at 10 miles per hour and the other at 5 miles per hour. In how many hours will they be 30 miles apart?
A) 2 hours
B) 4 hours
C) 3 hours
D) 1 hour

Answer: A

185) Chuck and Dana agree to meet in Chicago for the weekend. Chuck travels 180 miles in the same time that Dana travels 156 miles. If Chuck's rate of travel is 4 mph more than Dana's, and they travel the same length of time, at what speed does Chuck travel?
A) 35 mph
B) 26 mph
C) 25 mph
D) 30 mph

Answer: D

186) The speed of a stream is 4 mph. If a boat travels 94 miles downstream in the same time that it takes to travel 47 miles upstream, what is the speed of the boat in still water?
A) 15 mph
B) 8 mph
C) 12 mph
D) 14 mph

Answer: C

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187) A plane flies 480 miles with the wind and 320 miles against the wind in the same length of time. If the speed of the wind is 27 mph, what is the speed of the plane in still air?
A) 140 mph
B) 160 mph
C) 135 mph
D) 125 mph

Answer: C

188) Tom Quig traveled 260 miles east of St. Louis. For most of the trip he averaged 60 mph, but for one period of time he was slowed to 10 mph due to a major accident. If the total time of travel was 6 hours, how many miles did he drive at the reduced speed?
A) 15 miles
B) 30 miles
C) 20 miles
D) 40 miles

Answer: C

189) Find the length of a rectangular lot with a perimeter of 100 meters if the length is 8 meters more than the width. (P = 2L + 2W)
A) 21 m
B) 50 m
C) 58 m
D) 29 m

Answer: D

190) A square plywood platform has a perimeter which is 9 times the length of a side decreased by 20. Find the length of a side.
A) 1
B) 5
C) 9
D) 4

Answer: D

191) A rectangular Persian carpet has a perimeter of 192 inches. The length of the carpet is 24 inches more than the width. What are the dimensions of the carpet?
A) 84 inches, 108 inches
B) 72 inches, 96 inches
C) 36 inches, 60 inches
D) 60 inches, 84 inches

Answer: C

192) A triangle has a perimeter of 108 inches. Its shortest side measures 15 inches shorter than its middle side, and its longest side measures 18 inches longer than its middle side. Find the lengths of the triangle's three sides.
A) 20 inches, 35 inches, 53 inches
B) 32 inches, 47 inches, 29 inches
C) 40 inches, 25 inches, 43 inches
D) 52 inches, 37 inches, 19 inches

Answer: A

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193) It is necessary to have a 40% antifreeze solution in the radiator of a certain car. The radiator now has 50 liters of 20% solution. How many liters of this should be drained and replaced with 100% antifreeze to get the desired strength?

A) 20 liters
B) 12.5 liters
C) 16.7 liters
D) 25 liters

Answer: B

194) How many liters of a 20% alcohol solution must be mixed with 70 liters of a 50% solution to get a 30% solution?

A) 14 liters
B) 210 liters
C) 21 liters
D) 140 liters

Answer: D

195) In a chemistry class, 3 liters of a 4% silver iodide solution must be mixed with a 10% solution to get a 6% solution. How many liters of the 10% solution are needed?

A) 0.5 liters
B) 2.5 liters
C) 1.5 liters
D) 3.0 liters

Answer: C

196) The length of a rectangle is 4 inches more than the width. The perimeter of the rectangle is 64 inches. Find the width of the rectangle.

A) 14 in.
B) 16 in.
C) 15 in.
D) 18 in.

Answer: A

197) A sign is in the shape of an isosceles triangle. The third side is 17 inches less than the length of each equal side. Find the length of one equal side if the perimeter is 64 inches.

A) 21 in.
B) 27 in.
C) 30 in.
D) 10 in.

Answer: B

198) The length of a rectangular billboard is 6 inches more than the width. The perimeter of the billboard is 28 inches. Find the width of the billboard.

A) 7 in.
B) 4 in.
C) 10 in.
D) 6 in.

Answer: B

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Provide an appropriate response.

199) Which statement tells how to evaluate 9^3?
A) Multiply 3 times itself 9 times.
B) Multiply 9 times 3.
C) Multiply 9 times itself 3 times.
D) Divide 9 by 3.

Answer: C

200) 24^4 means?
A) $24 \div 4$
B) $24 \cdot 24 \cdot 24 \cdot 24$
C) $24 \cdot 4$
D) $24 \cdot 24 \cdot 24 \cdot 24 \cdot 24$

Answer: B

201) Which of the following is the correct way to evaluate the expression $4 + 6 \cdot 4$?
A) $4 + 6 \cdot 4 = 4 + 24 = 28$
B) $4 + 6 \cdot 4 = 10 \cdot 4 = 40$
C) $4 + 6 \cdot 4 = 16 + 24 = 40$
D) $4 + 6 \cdot 4 = 24 + 6 = 22$

Answer: A

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

202) What steps would you take to factor $x^2 + 17x + 70$?

Answer: Answers vary but they should find a number such that their product is 70 and their sum is 17.

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

203) $16x^2 - 9$ cannot be factored because there is no x term. Is this statement true?
A) No, it is not true.
B) Yes, it is true.

Answer: A

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

204) For what values, if any, of x ($x \neq 0$) and n will x^{-n} be a negative number?

Answer: If x is negative and n is odd, the answer will be negative.

205) Simplify the expressions $(2x)^0$ and $(2x^0)$ and explain how you arrived at your answers.

Answer: $(2x)^0 = 1$, because the exponent is applied to the entire quantity in the parentheses. $(2x^0) = 2$ because the exponent is applied only to the x.

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

206) A binomial is a polynomial.
A) Never
B) Always
C) Sometimes

Answer: B

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207) A trinomial is a polynomial.
A) Never
B) Sometimes
C) Always
Answer: C

208) Decide whether the statement is true or false by using the simplification procedures. $\sqrt{48} = 2\sqrt{12}$
A) True
B) False
Answer: A

Use factoring to solve the equation.

209) $(x + 8)(x - 15) = 0$
A) $-15, 8$
B) $-8, 15$
C) $8, -15$
D) $15, 8$
Answer: B

210) $x^2 - 12x + 36 = 16$
A) $2, -10$
B) $4, -4$
C) $10, 2$
D) 22
Answer: C

211) $r^2 + 8r + 16 = 17$
A) $\sqrt{17}, \sqrt{17}$
B) 13
C) $-4 + \sqrt{17}, -4 - \sqrt{17}$
D) $4 + \sqrt{17}, 4 - \sqrt{17}$
Answer: C

212) $x^2 - x = 42$
A) $6, 7$
B) $1, 42$
C) $-6, -7$
D) $-6, 7$
Answer: D

213) $x^2 + 3x - 70 = 0$
A) $10, -7$
B) $-10, 7$
C) $10, 7$
D) $-10, 1$
Answer: B

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214) $5x^2 - 40x + 75 = 0$

A) 5, 3, 5

B) - 3, - 5

C) 0, 3, 5

D) 3, 5

Answer: D

215) $12y^2 + 25y + 12 = 0$

A) $-\frac{4}{3}, -\frac{3}{4}$

B) $\frac{4}{3}, \frac{3}{4}$

C) $\frac{4}{3}, -\frac{3}{4}$

D) $-\frac{1}{3}, -\frac{1}{4}$

Answer: A

216) $30n^2 + 8n = 0$

A) 0

B) $-\frac{4}{15}, 8$

C) $-\frac{4}{15}$

D) $-\frac{4}{15}, 0$

Answer: D

217) $16k^2 - 81 = 0$

A) $\frac{4}{9}, -\frac{4}{9}$

B) $\frac{9}{4}, -\frac{9}{4}$

C) 9, 0

D) $\frac{4}{9}, 0$

Answer: B

218) $14m^2 - 12m = 0$

A) 0

B) $-\frac{6}{7}, 0$

C) $\frac{6}{7}, 0$

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

Answer: C

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Solve by the square-root property.

219) $(x - 5)^2 = 9$

A) 3, - 3
B) 14
C) 2, - 8
D) 8, 2

Answer: D

220) $(r + 2)^2 = 14$

A) $-2 + \sqrt{14}, -2 - \sqrt{14}$
B) $2 + \sqrt{14}, 2 - \sqrt{14}$
C) 12
D) $\sqrt{14}, \sqrt{14}$

Answer: A

221) $(x + 2)^2 = 44$

A) $2\sqrt{11} - 2, 2\sqrt{11} + 2$
B) $-2 + 2\sqrt{22}, -2 - 2\sqrt{22}$
C) $2\sqrt{11}, -2\sqrt{11}$
D) $-2 + 2\sqrt{11}, -2 - 2\sqrt{11}$

Answer: D

222) $(x + 4)^2 - 3 = 0$

A) $-2 \pm \sqrt{3}$
B) $-4 \pm \sqrt{3}$
C) $4 \pm \sqrt{3}$
D) - 1, 7

Answer: B

Use the quadratic formula to solve the equation. Give both exact and approximate answers.

223) $3m^2 + 9m + 3 = 0$

A) $\frac{-3 \pm \sqrt{5}}{6}$; - 0.127, - 0.873

B) $\frac{-3 \pm \sqrt{13}}{2}$; 0.303, - 3.303

C) $\frac{-9 \pm \sqrt{5}}{2}$; - 3.382, - 5.618

D) $\frac{-3 \pm \sqrt{5}}{2}$; - 0.382, - 2.618

Answer: D

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224) $4n^2 = -12n - 4$

A) $\frac{-3 \pm \sqrt{5}}{8}$; -0.095, -0.655

B) $\frac{-3 \pm \sqrt{13}}{2}$; 0.303, -3.303

C) $\frac{-12 \pm \sqrt{5}}{2}$; -4.882, -7.118

D) $\frac{-3 \pm \sqrt{5}}{2}$; -0.382, -2.618

Answer: D

225) $6x^2 + 8x = -1$

A) $\frac{-4 \pm \sqrt{10}}{6}$; -0.14, -1.194

B) $\frac{-8 \pm \sqrt{10}}{6}$; -0.806, -1.86

C) $\frac{-4 \pm \sqrt{10}}{12}$; -0.07, -0.597

D) $\frac{-4 \pm \sqrt{22}}{6}$; 0.115, -1.448

Answer: A

226) $6m^2 + 10m + 1 = 0$

A) $\frac{-5 \pm \sqrt{19}}{6}$; -0.107, -1.56

B) $\frac{-5 \pm \sqrt{31}}{6}$; 0.095, -1.761

C) $\frac{-5 \pm \sqrt{19}}{12}$; -0.053, -0.78

D) $\frac{-10 \pm \sqrt{19}}{6}$; -0.94, -2.393

Answer: A

227) $6n^2 = -8n - 1$

A) $\frac{-4 \pm \sqrt{10}}{6}$; -0.14, -1.194

B) $\frac{-8 \pm \sqrt{10}}{6}$; -0.806, -1.86

C) $\frac{-4 \pm \sqrt{10}}{12}$; -0.07, -0.597

D) $\frac{-4 \pm \sqrt{22}}{6}$; 0.115, -1.448

Answer: A

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228) $2x^2 + 10x = -6$

A) $\frac{-10 \pm \sqrt{13}}{2}$; -3.197, -6.803

B) $\frac{-5 \pm \sqrt{13}}{4}$; -0.349, -2.151

C) $\frac{-5 \pm \sqrt{13}}{2}$; -0.697, -4.303

D) $\frac{-5 \pm \sqrt{37}}{2}$; 0.541, -5.541

Answer: C

229) $x^2 - x = -30$

A) -5, -6

B) 5, 6

C) No real number solutions

D) 1, 30

Answer: C

Use the discriminant to determine the number of real solutions of the equation.

230) $s^2 + 2s - 3 = 0$

A) 2

B) No real solutions

C) 1

Answer: A

231) $t^2 + 10t + 25 = 0$

A) No real solutions

B) 2

C) 1

Answer: C

232) $v^2 + 8v + 5 = 0$

A) 2

B) No real solutions

C) 1

Answer: A

233) $w^2 + 3w + 6 = 0$

A) 2

B) 1

C) No real solutions

Answer: C

234) $9x^2 + 12x + 4 = 0$

A) 2

B) No real solutions

C) 1

Answer: C

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235) $4y^2 = 5y - 8$

A) 1
B) 2
C) No real solutions

Answer: C

236) $7 + 2z^2 = -5z$

A) 1
B) 2
C) No real solutions

Answer: C

237) $-1 - 3a^2 = 7a - 4$

A) 2
B) No real solutions
C) 1

Answer: A

Find approximate solutions of the equation.

238) $(m + 3.20)^2 = 23.04$

A) 1.60 or - 8.00
B) 3.01 or - 6.59
C) 1.60
D) 4.45 or - 4.45

Answer: A

239) $x^2 + 3.4x + 2.89 = 1{,}149.21$

A) 1,147.51 or - 1,150.91
B) 32.2
C) 32.2 or 35.6
D) 32.2 or - 35.6

Answer: D

240) $x^2 - 1.5x - 6.9 = 0$

A) 3.48 or - 1.98
B) 1.98 or - 1.98
C) 1.98 or - 3.48
D) 3.48 or - 3.48

Answer: A

241) $2x^2 + 3.1x - 7.3 = 0$

A) 1.29 or - 2.84
B) 2.84 or - 1.29
C) 2.84 or - 2.84
D) 1.29 or - 1.29

Answer: A

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242) $5.46x^2 + 7.2x + 1.5 = 0$

A) 1.06 or - 1.06
B) 1.06 or 0.26
C) - 0.26 or 0.26
D) - 0.26 or - 1.06

Answer: D

243) $4.24y^2 - 9.2y - 1.2 = 0$

A) 2.29 or - 0.12
B) 2.29 or - 2.29
C) 0.12 or - 0.12
D) 0.12 or - 2.29

Answer: A

244) $3y^2 + 7.4y - 2.8 = 0$

A) 2.80 or - 2.80
B) 0.33 or - 2.80
C) 2.80 or - 0.33
D) 0.33 or - 0.33

Answer: B

245) $6x^2 - 5x = 1$

A) 2 or - 0.34
B) 1 or - 0.17
C) 0.5 or 0.33
D) 0.17 or - 1

Answer: B

Solve the problem.

246) Two cars leave an intersection. One car travels north; the other east. When the car traveling north had gone 6 mi, the distance between the cars was 2 mi more than the distance traveled by the car heading east. How far had the eastbound car traveled?

A) 12 mi
B) 8 mi
C) 10 mi
D) 6 mi

Answer: B

247) An open box is to be made from a rectangular piece of tin by cutting two inch squares out of the corners and folding up the sides. The volume of the box will be 100 cubic inches. Find the dimensions of the rectangular piece of tin.

A) 5 in. by 9 in.
B) Not enough information
C) 5 in. by 10 in.
D) 4 in. by 9 in.

Answer: B

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248) A rectangular garden has dimensions of 22 feet by 10 feet. A gravel path of equal width is to be built around the garden. How wide can the path be if there is enough gravel for 228 square feet?

A) 5.5 ft
B) 5 ft
C) 4 ft
D) 3 ft

Answer: D

249) A picture is to be mounted on a piece of matte board 10 inches by 16 inches so that there is an even amount of matting all around the picture. How wide will the border be if the area of the mounted picture is 120 square inches?

A) 4 in.
B) 2 in.
C) 3 in.
D) 4.5 in.

Answer: B

250) A rug is to fit in a room so that a border of even width is left on all four sides. If the room is 12 feet by 15 feet and the area of the rug is 108 square feet, how wide will the border be?

A) 3.5 ft
B) 2.5 ft
C) 4 ft
D) 1.5 ft

Answer: D

251) The position of an object moving in a straight line is given by $s = 2t^2 - 3t$, where s is in meters and t is the time in seconds the object has been in motion. How long (to the nearest tenth) will it take the object to move 20 meters?

A) 4.0 sec
B) 3.8 sec
C) 74.0 sec
D) 21.0 sec

Answer: A

252) The position of an object moving in a straight line is given by $s = t^2 - 8t$, where s is in feet and t is the time in seconds the object has been in motion. How long (to the nearest tenth) will it take the object to move 17 feet?

A) 9.8 sec
B) 18.0 sec
C) 9.6 sec
D) 15.3 sec

Answer: A

253) A ball is thrown downward from a window in a tall building. Its position at time t in seconds is $s = 16t^2 + 32t$, where s is in feet. How long (to the nearest tenth) will it take the ball to fall 76 feet?

A) 2.2 sec
B) 1.4 sec
C) 1.2 sec
D) 2.0 sec

Answer: B

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254) Use the formula $A = P(1 + r)^2$ to find what the rate of interest is if a principal amount of \$5,500 grows to \$6,415.20 in 2 years, if interest is compounded annually.

A) 8%
B) 10%
C) 6%
D) 9%

Answer: A

255) Tony bought some stock for \$450. If each share had cost \$7 less he could have bought 7 more shares for the same \$ 450. How many shares of stock did he buy?

A) 18 shares
B) 20 shares
C) 15 shares
D) 13 shares

Answer: A

Solve the equation for the indicated variable.

256) $A = 6s^2$ for s

A) $s = \pm\sqrt{\frac{A}{6}}$
B) $s = 36A^2$
C) $s = \frac{A}{6}$
D) $s = \pm\sqrt{6A}$

Answer: A

257) $A = \pi r^2$ for r

A) $r = \pm\sqrt{\frac{A}{\pi}}$
B) $r = \frac{A}{\pi}$
C) $r = \pm\sqrt{\frac{\pi}{A}}$
D) $r = A\pi$

Answer: A

258) $E = mc^2$ for c

A) $c = \frac{E}{m}$
B) $c = \pm\sqrt{Em}$
C) $c = \pm\sqrt{\frac{E}{m}}$
D) $c = Em$

Answer: C

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259) $4\pi r^2 = A$ for r

A) $r = \pm\sqrt{\frac{A}{2\pi}}$

B) $r = \pm\frac{1}{2}\sqrt{\frac{A}{\pi}}$

C) $r = 2\pi\sqrt{A}$

D) $r = \pm\sqrt{2\pi A}$

Answer: B

260) $v^2 = 2as$ for v

A) $v = \frac{2a}{s}$

B) $v = \pm\sqrt{2as}$

C) $v = \pm\sqrt{\frac{2a}{s}}$

D) $v = 2a\sqrt{s}$

Answer: B

261) $A = \frac{1}{3}\pi r^2$ for r

A) $r = \pm\sqrt{\frac{A}{3\pi}}$

B) $r = \pm\sqrt{\frac{3A}{\pi}}$

C) $r = 3\sqrt{A\pi}$

D) $r = \frac{3\pi}{A}$

Answer: B

262) $S = \frac{1}{2}gt^2$ for t

A) $t = \pm 2\sqrt{gs}$

B) $t = 2gS$

C) $t = \pm\sqrt{\frac{g}{2S}}$

D) $t = \pm\sqrt{\frac{2S}{g}}$

Answer: D

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263) $c = \pm\sqrt{\frac{E}{m}}$ for E

A) $E = mc^2$

B) $E = \pm\sqrt{\frac{c}{m}}$

C) $E = \pm c\sqrt{m}$

D) $E = mc$

Answer: A

264) $r = \pm\sqrt{\frac{A}{2\pi}}$ for A

A) $A = 2\pi r$

B) $A = 2\pi r^2$

C) $A = \pm\sqrt{2\pi r}$

D) $A = \pm 2\pi\sqrt{r}$

Answer: B

265) $x = \pm\sqrt{r^2 - y^2}$ for r

A) $r = \pm\sqrt{x + y}$

B) $r = x + y$

C) $r = \pm\sqrt{x^2 - y^2}$

D) $r = \pm\sqrt{x^2 + y^2}$

Answer: D

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

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

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101) A
102) A
103) D
104) A
105) D
106) A
107) C
108) C
109) A
110) B
111) C
112) A
113) D
114) B
115) D
116) D
117) D
118) D
119) D
120) A
121) C
122) C
123) A
124) A
125) C
126) C
127) D
128) C
129) D
130) C
131) D
132) C
133) C
134) C
135) D
136) C
137) A
138) D
139) D
140) A
141) C
142) C
143) C
144) B
145) C
146) D
147) A
148) D
149) C
150) C

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151) D
152) B
153) A
154) D
155) D
156) B
157) C
158) C
159) D
160) C
161) D
162) A
163) A
164) B
165) C
166) D
167) C
168) B
169) B
170) A
171) B
172) A
173) C
174) A
175) D
176) B
177) B
178) C
179) A
180) D
181) D
182) D
183) B
184) A
185) D
186) C
187) C
188) C
189) D
190) D
191) C
192) A
193) B
194) D
195) C
196) A
197) B
198) B
199) C
200) B

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201) A
202) Answers vary but they should find a number such that their product is 70 and their sum is 17.
203) A
204) If x is negative and n is odd, the answer will be negative.
205) $(2x)^0 = 1$, because the exponent is applied to the entire quantity in the parentheses. $(2x^0) = 2$ because the exponent is applied only to the x.
206) B
207) C
208) A
209) B
210) C
211) C
212) D
213) B
214) D
215) A
216) D
217) B
218) C
219) D
220) A
221) D
222) B
223) D
224) D
225) A
226) A
227) A
228) C
229) C
230) A
231) C
232) A
233) C
234) C
235) C
236) C
237) A
238) A
239) D
240) A
241) A
242) D
243) A
244) B
245) B
246) B
247) B
248) D
249) B

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250) D
251) A
252) A
253) B
254) A
255) A
256) A
257) A
258) C
259) B
260) B
261) B
262) D
263) A
264) B
265) D

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