Exam

Name_____

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. 1) _____
A) True B) False

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

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

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

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

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

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

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

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

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

Name the property illustrated.

11) $8 \cdot 1 = 8$ 11) _____
A) Distributive property B) Identity property
C) Associative property D) Commutative property

12) $(9 + 2) + 1 = (2 + 9) + 1$ 12) _____

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

13) $1 + 0 = 1$ 13) _____

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

14) $6(x + 8) = 6x + 6 \cdot 8$ 14) _____

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

15) $4 + 3 = 3 + 4$ 15) _____

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

16) $(3 \cdot 4) \cdot 7 = 3 \cdot (4 \cdot 7)$ 16) _____

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

17) $7 \cdot 8 = 8 \cdot 7$ 17) _____

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

18) $3 + (9 + 6) = (3 + 9) + 6$ 18) _____

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

19) $3(8 + 7) = (8 + 7)3$ 19) _____

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

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

20) $7x + 5y - 6a$ 20) _____

A) 35 B) 25 C) -1 D) -52

21) $(4x + 6y)(-3a)$ 21) _____

A) -120 B) 120 C) 0 D) -384

22) $-6a - 5y - 7x$ 22) _____

A) 13 B) 11 C) 5 D) 23

23) $(4 + x)(6 + y)(-3 - a)$ 23) _____

A) -126 B) 18 C) -378 D) -18

24) $(-7a)(-2x - 3y)$ 24) _____

A) 0 B) 140 C) -140 D) -364

25) $6(x - 8) + 5a^2$ 25) _____

A) 44 B) 20 C) -80 D) -140

Evaluate the expression using order of operations.

26) $(7 + (-3))[3 + (5 + 2)]$ 26) _____

A) 40 B) 14 C) 10 D) 37

27) $\frac{(-7) \cdot (7 + 8) + (-7) \cdot 2}{(-7) \cdot (2 - 1)}$ 27) _____

A) $\frac{128}{7}$ B) $\frac{1}{17}$ C) $\frac{120}{7}$ D) 17

28) $\frac{(-7) \cdot (7 - 7) + (-7) \cdot 6}{(-7) \cdot (4 - 1)}$ 28) _____

A) 18 B) $\frac{1}{2}$ C) 2 D) $\frac{43}{21}$

29) $8[-6 + 4(-7 + (-8))]$ 29) _____

A) 240 B) -528 C) 236 D) -108

30) $-15 + (5 \cdot 2 + 20) \div 5$ 30) _____

A) -9 B) 5 C) -1 D) 9

31) $(7 + 3)[2 + (6 + 7)]$ 31) _____

A) 150 B) 33 C) 21 D) 25

32) $2[7 + 5(8 - 5)]$ 32) _____

A) 29 B) 44 C) 68 D) 72

33) $\frac{3(4 + 6) - 7}{2}$ 33) _____

A) $\frac{23}{2}$ B) $\frac{2}{11}$ C) $\frac{11}{2}$ D) $\frac{25}{2}$

34) $5 \cdot 4^2$ 34) _____

A) 320 B) 400 C) 20 D) 80

35) $(7 + (-5))[4 + (\sqrt{49} + 8^2)]$ 35) _____

A) 23 B) 25 C) 150 D) 29

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

36) 4 is less than 7. 36) _____

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

37) -8 is greater than -11. 37) _____

A) $-8 \geq -11$ B) $-11 > -8$ C) $-8 > -11$ D) $-8 < -11$

38) x is less than or equal to 2. 38) _____

A) $x \geq 2$ B) $2 \leq x$ C) $x < 2$ D) $x \leq 2$

39) y is greater than or equal to -6. 39) _____

A) $y \geq -6$ B) $y \leq -6$ C) $-6 \geq y$ D) $y > -6$

40) w is positive. 40) _____

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

41) s is negative. 41) _____

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

42) p is at most 33 42) _____

A) $p > 33$ B) $p \geq 33$ C) $p < 33$ D) $p \leq 33$

43) p is at least 45 43) _____

A) $p > 45$ B) $p \geq 45$ C) $p < 45$ D) $p \leq 45$

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

44) $\frac{1}{8}$ ___ 0.125 44) _____

A) > B) < C) =

45) $\frac{2}{11}$ ___ 0.18 45) _____

A) = B) > C) <

46) $\sqrt{28}$ ___ $\frac{2546}{416}$ 46) _____

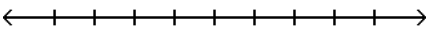
A) = B) < C) >

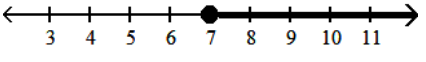
47) -9 ___ -1 47) _____

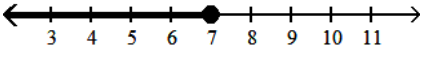
A) < B) = C) >

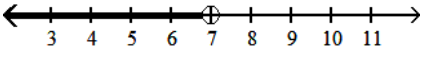
Graph the inequality on a number line.

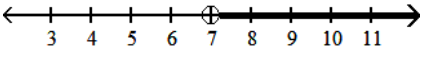
48) (7, ∞) 48) _____



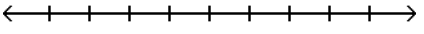
A) 

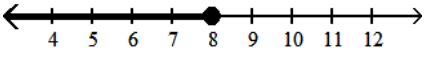
B) 

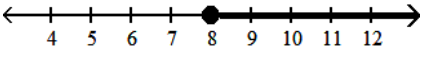
C) 

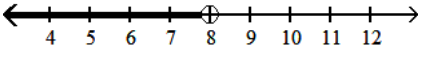
D) 

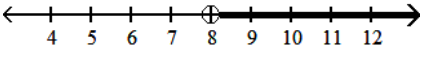
49) (-∞, 8) 49) _____



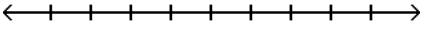
A) 

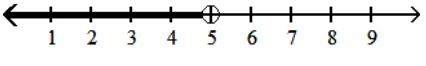
B) 

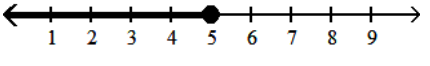
C) 

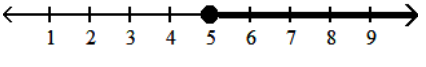
D) 

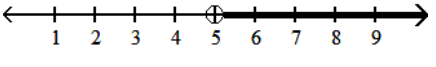
50) [5, ∞) 50) _____



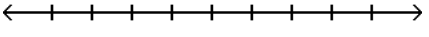
A) 

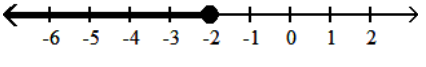
B) 

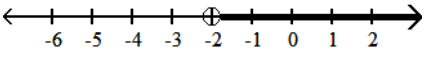
C) 

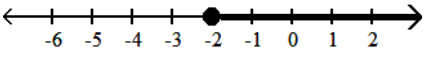
D) 

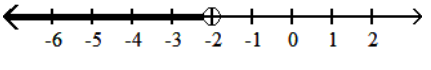
51) (-∞, -2] 51) _____



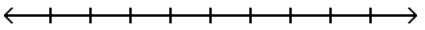
A) 

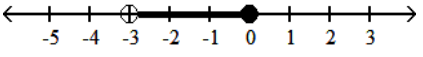
B) 

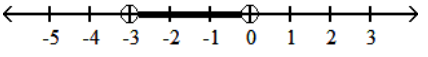
C) 

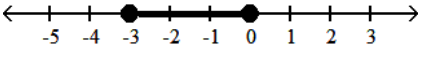
D) 

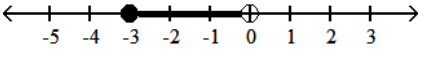
52) [-3, 0] 52) _____



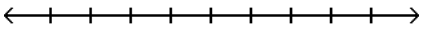
A) 

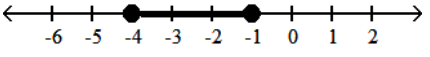
B) 

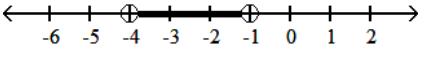
C) 

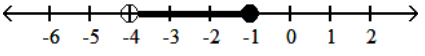
D) 

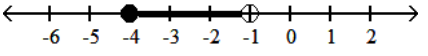
53) (-4, -1] 53) _____



A) 

B) 

C) 

D) 

Solve the problem.

54) Kafka Inc. imports hard drives and sells them on the internet. The profit is given by the equation P = 140n - 6500, where n is the number of hard drives sold. Estimate the profit, to the nearest ten dollars, corresponding to the sale of 775 hard drives. 54) _____

A) $102,020 B) $102,010 C) $101,990 D) $102,000

55) Kafka Inc. imports hard drives and sells them on the internet. The profit is given by the equation P = 153n - 7000, 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. 55) _____

A) 44 hard drives B) 66 hard drives C) 50 hard drives D) 46 hard drives

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. 56) _____

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 Bob and the weight loss of Don?

A) -7166 grams B) 7166 grams C) 1250 grams D) -1250 grams

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. 57) _____

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 Don lose than Frank?

A) 3815 grams B) 2101 grams C) -2101 grams D) -3815 grams

Evaluate the expression.

58) $-|-8| - |10|$ 58) _____

A) -18 B) -2 C) 18 D) 2

59) $-|-6| - |7|$ 59) _____

A) 1 B) -13 C) 13 D) -1

60) $-|-22| - |-22 - 19|$ 60) _____

A) -19 B) 19 C) -63 D) 63

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

61) $|21| \_ |-21|$ 61) _____

A) > B) = C) <

62) $-|-1| \_ |1|$ 62) _____

A) > B) = C) <

63) $-|4| \_ |-4|$ 63) _____

A) > B) = C) <

64) $|5 - (-4)| \_ |-5 - 4|$ 64) _____

A) = B) > C) <

65) $|8 - 3| \_ |3 - 8|$ 65) _____

A) = B) > C) <

66) $|5| \cdot |-4| \_ |4(5)|$ 66) _____

A) < B) = C) >

67) $|10 - 3| \_ |10| - |3|$ 67) _____

A) > B) < C) =

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

68) A Software company could lose up to 6% of its market share due to slow product delivery. Let x be the market share lost. 68) _____

A) $x \geq -0.06$ B) $x \geq 0.06$ C) $x \leq 0.06$ D) $x \leq -0.06$

69) The market shakeout could result in as few as 5 companies remaining in business. 69) _____

A) $x - 5 = 0$ B) $x \geq 5$ C) $x \leq 5$ D) $x = 5$

70) Computer company XYZ can't possibly spend less than $38 million in advertising to regain its market share. 70) _____

A) $x \leq \$38$ million B) $x < \$38$ million

C) $x > \$38$ million D) $x \geq \$38$ million

71) The new software product will cost between $295 and $370 per unit. 71) _____

A) $\$295 \leq x \leq \$370$ B) $\$295 < x < \$370$

C) $x > \$295, x < \$370$ D) $x \leq 370$

72) When a baseball player is in a slump, he may get fewer than 5 hits in 21 times at bat. Let x represent the number of hits. 72) _____

A) $5 < x < 21$ B) $x > \frac{5}{21}$ C) $x < 5$ D) $x < 21$

73) A plumber makes more money than 54% of the population and is better educated than 72%. Find the average status and status incongruity for this person. 73) _____

A) 9 and 37 B) 9 and 63 C) 37 and 9 D) 63 and 9

Use a calculator to evaluate the expression.

74) 7^2 74) _____

A) 9 B) 3 C) 49 D) 14

75) 11^2 75) _____

A) 22 B) 13 C) 242 D) 121

76) 2^5 76) _____

A) 4 B) 10 C) 25 D) 32

77) -8^5 77) _____

A) 32,768 B) 40 C) -40 D) -32,768

78) $(-4)^4$ 78) _____

A) 16 B) -256 C) -16 D) 256

79) -4.2^3 79) _____

A) -74.09 B) 12.60 C) -12.60 D) 74.09

80) $(-7.3)^2$ 80) _____

A) 53.3 B) -53.3 C) 14.6 D) -14.6

81) $(-5.2)^9$ 81) _____

A) -2,779,905.88 B) 46.8 C) 2,779,905.88 D) -46.8

82) $\left(\frac{1}{3}\right)^{10}$ 82) _____

A) 30 B) 0 C) 59,049 D) 3.3333

83) $\left(\frac{4}{3}\right)^2$ 83) _____

A) 1.778 B) 5.333 C) 0.444 D) 2.667

Simplify. Leave answer with exponent.

84) $8^3 \cdot 8^7$ 84) _____

A) 64^{21} B) 64^{10} C) 8^{21} D) 8^{10}

85) $(-2)^3 \cdot (-2)^4$ 85) _____

A) 4^7 B) -2^7 C) 2^7 D) 4^{12}

86) $(-5)^9 \cdot (-5)^3$ 86) _____

A) 5^{12} B) -5^{12} C) 25^{27} D) 25^{12}

87) $(4y)^5 \cdot (4y)^9$ 87) _____

A) $16y^{14}$ B) $(4y)^{14}$ C) $4y^{45}$ D) $16y^{45}$

88) $3^3 \cdot 3^3$ 88) _____

A) 9^6 B) 3^6 C) 3^9 D) 9^9

Identify the degree of the polynomial and list its coefficients.

89) $6x - 5$ 89) _____

A) degree: 1
coefficients: 6, -5

B) degree: 1
coefficients: 6, 5

C) degree: 0
coefficients: 6, -5

D) degree: 6
coefficients: 6, 5

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

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

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

C) degree: 3
coefficients: 3, -2, 4

D) degree: 3
coefficients: -2, 4

91) $-5x^3 - 4x^2 + 7x + 2$ 91) _____

A) degree: 3
coefficients: -5, -4, 7, 2

B) degree: -5
coefficients: 3, 2, 1, 0

C) degree: 3
coefficients: 5, 4, 7, 2

D) degree: 5
coefficients: 5, -4, 7, 2

92) $2x^5 - 6x^3 - 4x^2 + 8$ 92) _____

A) degree: 11
coefficients: 2, -6, -4, 8

B) degree: 2
coefficients: -6, -4, 8

C) degree: 5
coefficients: 2, -6, -4, 8

D) degree: 5
coefficients: 2, 6, 4, 8

Add or subtract as indicated.

93) $(7n^5 + 4n^2 + 6) + (9n^5 + 6n^2 - 2)$ 93) _____

A) $16 + 10n^5 + 4n^2$

B) $16n^5 + 10n^2 + 4$

C) $30n^7$

D) $15n^5 + 13n^2 + 2$

94) $(5n^5 + 4n^2 - 9) - (-11n^2 + 9n^5 - 19)$ 94) _____

A) $21n^7$

B) $-4n^5 + 15n^2 - 28$

C) $-4n^5 + 15n^2 + 10$

D) $-4n^5 + 13n^2 - 28$

95) $(4n^5 + 4n^3 + 9n) + (3n^5 + 2n^3 + 6n)$ 95) _____

A) $7n^5 + 6n^3 + 15n$

B) $28n^9$

C) $7n + 6n^5 + 15n^3$

D) $12n^5 + 6n^3 + 10n$

96) $(3n^7 + 9n^5 + 11n) - (9n^7 - 17n^5 + 4n)$ 96) _____

A) $-6n^7 + 26n^5 + 7n$

B) $-6n^7 + 26n^5 + 15n$

C) $27n^{13}$

D) $-6n^7 + 18n^5 + 15n$

97) $(7 + 5x^6 + 9x^8 - 2x^7) + (-9x^7 - 2x^6 - 4 + 4x^8)$ 97) _____

A) $13x^{16} - 11x^{14} + 3x^{12} + 3$

B) $13x^8 - 11x^7 + 3x^6 + 3$

C) $5x^{42} + 3$

D) $-2x^8 - 2x^7 + 5x^6 + 2$

98) $(9x^3 + 8x^5 - 5 + 3x^4) - (-6 + 8x^4 + 3x^5 - 3x^3)$ 98) _____

A) $11x^5 + 11x^4 + 6x^3 - 11$

B) $5x^5 + 11x^4 + 6x^3 - 11$

C) $11x^5 + 11x^4 + 6x^3 + 1$

D) $5x^5 - 5x^4 + 12x^3 + 1$

99) $(2x^9 + 13x^7 - 9x^2 + 13) - (4x^9 - 11x^4 + 8x^2 - 13)$ 99) ____

A) $-2x^9 + 13x^7 - 11x^4 - 17x^2 + 26$

B) $2x^9 + 13x^7 - 11x^4 - 17x^2 + 26$

C) $2x^9 + 13x^7 + 11x^4 - 17x^2 + 26$

D) $-2x^9 + 13x^7 + 11x^4 - 17x^2 + 26$

Find the product.

100) $(x + 1)(3x + 3)$ 100) ____

A) $3x^2 + 6x + 3$ B) $3x^2 + 6x + 6$ C) $3x^2 + 4x + 3$ D) $3x^2 + 3x + 6$

101) $(-5x - 9)(-4x - 1)$ 101) ____

A) $-9x^2 + 41x + 41$

B) $20x^2 + 41x + 9$

C) $20x^2 + 41x + 41$

D) $-9x^2 + 41x + 9$

102) $(x - 3y)(x + 8y)$ 102) ____

A) $x^2 + 5xy + 5y^2$

B) $x^2 + 2xy - 24y^2$

C) $x + 5xy - 24y$

D) $x^2 + 5xy - 24y^2$

103) $(x + 6y)(-3x + 8y)$ 103) ____

A) $x^2 - 10xy + 48y^2$

B) $-3x^2 - 10xy + 48y^2$

C) $-3x^2 - 10xy - 10y^2$

D) $x^2 - 10xy - 10y^2$

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

A) $4x^2 - 12x - 9$ B) $4x^2 + 12x - 9$ C) $2x^2 - 12x - 9$ D) $4x^2 - 9$

105) $(0.005x - 0.23)(0.7x + 0.46)$ 105) ____

A) $0.705x^2 - 0.1587x - 0.1587$

B) $0.705x^2 - 0.1587x - 0.1058$

C) $0.0035x^2 - 0.1587x - 0.1587$

D) $0.0035x^2 - 0.1587x - 0.1058$

106) $(5.1x - 2.9)(0.4x - 3.3)$ 106) ____

A) $5.5x^2 - 17.99x - 17.99$

B) $5.5x^2 - 17.99x + 9.57$

C) $2.04x^2 - 17.99x - 17.99$

D) $2.04x^2 - 17.99x + 9.57$

107) $(3p - 1)(9p^2 + 3p + 1)$ 107) ____

A) $27p^3 + 1$

B) $27p^3 + 12p^2 - 1$

C) $27p^3 - 1$

D) $9p^3 - 1$

108) $(4y - 5)(16y^2 + 20y + 25)$ 108) ____

A) $64y^3 + 100y^2 - 125$

B) $16y^3 + 125$

C) $64y^3 + 125$

D) $64y^3 - 125$

109) $7x(-7x^2 - 4x - 6)$ 109) ____

A) $-49x^3 - 4x^2 - 42x$ B) $-49x^3 - 28x^2 - 6x$

C) $-49x^3 - 70x^2$ D) $-49x^3 - 28x^2 - 42x$

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

110) Item Price Fixed Cost Variable Cost 110) ____

$6.00 $27,953 2173x

A) R = 6000x; C = 55,906 + 2173x; P = 3827x - 27,953

B) R = 6000x; C = 27,953 + 2173x; P = 3927x - 27,953

C) R = 6000x; C = 27,953 + 2173x; P = 3827x - 27,953

D) R = 12,000x; C = 27,953 + 2173x; P = 3827x - 27,953

111) Item Price Fixed Cost Variable Cost 111) ____

$3.00 $187,950 $-3x^2 + 3480x - 100$

A) R = 3000x; C = $-3x^2 + 3480x + 187,850$; P = $3x^2 - 3180x - 187,950$

B) R = 3000x; C = $-3x^2 + 3480x + 187,950$; P = $3x^2 - 3180x - 187,850$

C) R = 3000x; C = $3x^2 + 3480x + 187,850$; P = $-3x^2 - 3180x - 187,850$

D) R = 3000x; C = $-3x^2 + 3480x + 187,850$; P = $3x^2 - 3180x - 187,850$

Solve the problem.

112) The polynomial $0.0035x^3 + 0.0053x^2 + 0.18x + 1.07$ 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 1999. 112) ____

A) $1.66 million B) $2.1 million C) $1.48 million D) $1.75 million

113) The polynomial $0.0055x^4 - 0.0054x^3 + 0.0054x^2 + 0.13x + 1.02$ 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 16 years from now. 113) ____

A) 290.56 million B) 416.95 million C) 342.81 million D) 471.52 million

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 6 hours? 114) ____

A) Yes B) No

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? 115) ____

A) 25 ft B) 80 ft C) 400 ft D) 6400 ft

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 6 seconds. 116) ____

A) 576 ft B) 96 ft C) 288 ft D) 1152 ft

117) The position of an object moving in a straight line is given by $s = 8t^2 - 6t$, 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 8 seconds? 117) ____

A) 16 m B) 464 m C) 128 m D) 320 m

118) The polynomial $-0.1t^2 + 2t$ 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? 118) ____

A) year 9 B) year 13.33 C) year 20 D) year 10

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 $R = 260x - 0.4x^2$ and $C = 8000 + 0.3x^2$, find the profit from the sale of 50 televisions. 119) ____

A) $4750 B) $3250 C) $19,250 D) $20,750

Factor out the greatest common factor.

120) $12m^9 + 36m^7 - 36m^3$ 120) ____

A) $m^3(12m^6 + 36m^4 - 36)$ B) $12m^3(1m^6 + 3m^4 - 3)$

C) No common factor D) $12(1m^9 + 3m^7 - 3m^3)$

121) $60m^9 + 108m^4 + 84m^2$ 121) ____

A) No common factor B) $12(5m^9 + 9m^4 + 7m^2)$

C) $m^2(60m^7 + 108m^2 + 84)$ D) $12m^2(5m^7 + 9m^2 + 7)$

122) $96x^8y^9 + 96x^5y^5 - 120x^3y^2$ 122) ____

A) $24(4x^8y^9 + 4x^5y^5 - 5x^3y^2)$ B) No common factor

C) $24x^3(4x^5y^9 + 4x^2y^5 - 5y^2)$ D) $24x^3y^2(4x^5y^7 + 4x^2y^3 - 5)$

123) $128x^8y^9 + 144x^2y^6 - 80x^5y^4$ 123) ____

A) $16x^2y^4(8x^6y^5 + 9y^2 - 5x^3)$ B) No common factor

C) $16(8x^8y^9 + 9x^2y^6 - 5x^5y^4)$ D) $16x^2(8x^6y^9 + 9y^6 - 5x^3y^4)$

124) $16m^2 - 19r^3$ 124) ____

A) $3(5m^2 - 6r^3)$ B) $2(8m^2 + 9r^3)$

C) No common factor D) $m^2(16 - 19m)$

125) $y^7 - 37yb^3 + 17y^3b^5 - 3y^7b^3$ 125) ____

A) $y(y^6 - 37b^3 + 17y^2b^5 - 3y^6b^3)$ B) $yb^3(y^6 - 37 + 17y^2b^2 - 3y^6)$

C) $yb(y^6 - 37b^2 + 17y^2b^4 - 3y^6b^2)$ D) $y^2(y^6 - 37b^2 + 17y^2b^4 - 3y^6b^2)$

126) $5(6y - 1)^6 + 11(6y - 1)^7$ 126) ____

A) $(6y + 1)(11y + 1)$ B) $6(6y - 1)^6(11y - 1)$

C) $6(6y + 1)^6(11y + 1)$ D) $(6y - 1)(11y - 1)$

127) $3(x + 6)^5 + 4(x + 6)^7$ 127) ____

A) $7(x + 6)^5$ B) $(x + 6)^5(4x^2 + 48x + 147)$

C) $(x + 6)^5(4x^2 + 147)$ D) $7(x + 6)$

Factor completely.

128) $x^2 - x - 20$ 128) ____

A) Prime B) $(x + 4)(x - 5)$ C) $(x + 5)(x - 4)$ D) $(x + 1)(x - 20)$

129) $x^2 + 7x - 44$ 129) ____

A) Prime B) $(x - 11)(x + 4)$ C) $(x - 11)(x + 1)$ D) $(x + 11)(x - 4)$

130) $x^2 - 10x + 24$ 130) ____

A) Prime B) $(x + 4)(x + 1)$ C) $(x - 4)(x - 6)$ D) $(x + 4)(x - 6)$

131) $x^2 - x - 45$ 131) ____

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

132) $x^2 + 32x + 33$ 132) ____

A) $(x - 11)(x + 3)$ B) $(x + 33)(x - 1)$ C) $(x + 11)(x - 3)$ D) Prime

133) $2x^2 - 2x - 12$ 133) ____

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

134) $5x^2 - 45x + 100$ 134) ____

A) $5(x - 4)(x - 5)$ B) $(x - 4)(5x - 25)$ C) $(5x - 20)(x - 5)$ D) $5(x - 20)(x + 1)$

135) $6x^2 + 17x + 12$ 135) ____

A) $(3x - 4)(2x - 3)$ B) Prime C) $(3x + 4)(2x + 3)$ D) $(6x + 4)(x + 3)$

136) $15y^2 + 22y + 8$ 136) ____

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

137) $12z^2 + 7z - 12$ 137) ____

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

138) $15z^2 - 8z - 16$ 138) ____

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

139) $x^2 + 12xy + 27y^2$ 139) ____

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

140) $u^2 - 2uv - 48v^2$ 140) ____

A) $(u + 6v)(u - 8v)$ B) $(u - 6v)(u + 8v)$

C) Prime D) $(u - 6v)(u + v)$

141) $x^2 + 2xy - 143y^2$ 141) ____

A) $(x - 13y)(x + 11y)$ B) $(x + 13y)(x - 11y)$

C) Prime D) $(x - 13y)(x + y)$

142) $7x^2 - 21xy - 28y^2$ 142) ____

A) $7(x + y)(x - 4y)$ B) Prime

C) $7(x - y)(x + 4y)$ D) $(7x - 7y)(x + 4y)$

143) $5x^3 + 5x^2y - 100xy^2$ 143) ____

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

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

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

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

E) Prime

144) $x^3y + 2x^2y^2 - 35xy^3$ 144) ____

A) $xy(x^2 + 2x - 35y^2)$ B) $xy(x + 7y)(x - 5y)$

C) $x(xy + 7y^2)(x - 5y)$ D) $y(x + 7y)(xy - 5y^2)$

145) $6x^2 - 17xt + 12t^2$ 145) ____

A) $(2x - 3t)(3x - 4t)$ B) $(6x - 3t)(x - 4t)$

C) Prime D) $(2x + 3t)(3x + 4t)$

146) $12x^2 - 13xt - 4t^2$ 146) ____

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

147) $16x^2 - 25$ 147) ____

A) Prime B) $(4x + 5)(4x - 5)$ C) $(4x - 5)^2$ D) $(4x + 5)^2$

148) $49x^2 + 36$ 148) ____

A) $(7x - 6)^2$ B) $(7x + 6)(7x - 6)$ C) $(7x + 6)^2$ D) Prime

149) $x^2 + 30x + 225$ 149) ____

A) Prime B) $(x + 15)^2$ C) $(x - 15)^2$ D) $(x + 15)(x - 15)$

150) $x^2 + 6xy + 9y^2$ 150) ____

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

151) $25x^2 - 10x + 1$ 151) ____

A) $(5x + 1)^2$ B) Prime C) $(5x - 1)^2$ D) $(5x - 1)(5x + 1)$

152) $392x^2 - 896x + 512$ 152) ____

A) $8(49x^2 - 112x + 64)$ B) $8(7x - 8)^2$

C) $8(7x + 8)(7x - 8)$ D) $(56x - 64)(7x - 8)$

153) $8x^2 + 56xy + 98y^2$ 153) ____

A) $(4x + 14y)(2x + 7y)$ B) $2(4x^2 + 28xy + 49y)$

C) $2(2x - 7y)(2x + 7y)$ D) $2(2x + 7y)^2$

154) $50x^3 - 20x^2 + 2x$ 154) ____

A) $2x(5x - 1)(5x - 1)$ B) $x(10x - 2)(5x - 1)$

C) $2(5x^2 - 1)(5x - 1)$ D) $x(5x - 1)(10x - 2)$

155) $3x^3 + 3x^2y - 36xy^2$ 155) ____

A) $(3x^2 + 9xy)(x - 4y)$ B) $(x - 3y)(3x^2 + 12xy)$

C) $3x(x + 3y)(x - 4y)$ D) $3x(x - 3y)(x + 4y)$

156) $18x^2 - 63x - 36$ 156) ____

A) $(18x - 9)(x + 4)$ B) $(2x - 1)(9x + 36)$

C) $9(2x + 1)(x - 4)$ D) $9(2x - 1)(x + 4)$

157) $125p^3 - 1$ 157) ____

A) $(5p - 1)(25p^2 + 5p + 1)$ B) $(125p - 1)(p^2 + 5p + 1)$

C) $(5p + 1)(25p^2 - 5p + 1)$ D) $(5p - 1)(25p^2 + 1)$

158) $x^3 - 1000$ 158) ____

A) $(x + 1000)(x^2 - 1)$ B) $(x + 10)(x^2 - 10x + 100)$

C) $(x - 10)(x^2 + 100)$ D) $(x - 10)(x^2 + 10x + 100)$

159) $343y^3 - 216$ 159) ____

A) $(7y - 6)(49y^2 + 36)$ B) $(343y - 6)(y^2 + 42y + 36)$

C) $(7y + 6)(49y^2 - 42y + 36)$ D) $(7y - 6)(49y^2 + 42y + 36)$

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

A) $(5a - 3b)(25a^2 + 9b^2)$ B) $(125a - 3b)(a^2 + 15ab + 9b^2)$

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

161) $192k^3m - 375m^4$ 161) ____

A) $3m(64k - 5m)(k^2 + 20km + 25m^2)$ B) $(12km - 15m^2)(16k^2 + 25m^2)$

C) $3m(4k + 5m^2)(16k^2 - 20km + 25km^2)$ D) $3m(4k - 5m)(16k^2 + 20km + 25m^2)$

162) $27s^3 + 1$ 162) ____

A) $(3s + 1)(9s^2 - 3s + 1)$ B) $(27s + 1)(s^2 - 3s + 1)$

C) $(3s - 1)(9s^2 + 3s + 1)$ D) $(3s + 1)(9s^2 + 1)$

163) $t^3 + 125$ 163) ____

A) $(t - 125)(t^2 - 1)$ B) $(t - 5)(t^2 + 5t + 25)$

C) $(t + 5)(t^2 + 25)$ D) $(t + 5)(t^2 - 5t + 25)$

164) $343c^3 + 729$ 164) ____

A) $(7c - 9)(49c^2 + 63c + 81)$ B) $(343c + 9)(c^2 - 63c + 81)$

C) $(7c + 9)(49c^2 - 63c + 81)$ D) $(7c + 9)(49c^2 + 81)$

Write the expression in lowest terms.

165) $\frac{(y + 9)(y - 2)}{(y - 2)(y + 7)}$ 165) ____

A) $\frac{y + 9}{y + 7}$ B) $\frac{y - 9}{y - 7}$ C) $\frac{y + 2}{y + 5}$ D) $\frac{2y - 2}{2y + 5}$

166) $\frac{6k^3}{3k}$ 166) ____

A) $2k$ B) $2k^2$ C) $3k^2$ D) 3

167) $\frac{a^2 - 7a}{(a + 6)(a - 7)}$ 167) ____

A) $\frac{a}{a + 6}$ B) $\frac{1}{a + 6}$ C) $\frac{a - 7}{a + 6}$ D) $\frac{a^2}{a + 6}$

168) $\frac{3x + 4}{15x^2 + 26x + 8}$ 168) ____

A) $\frac{3x + 5}{5x + 26}$ B) $\frac{3x + 4}{15x^2 + 26x + 8}$ C) $\frac{1}{5x + 2}$ D) $\frac{3x}{5x + 2}$

169) $\frac{y^2 + 11y + 30}{y^2 + 14y + 45}$ 169) ____

A) $\frac{y + 6}{y + 9}$ B) $-\frac{y^2 + 11y + 30}{y^2 + 14y + 45}$

C) $\frac{11y + 30}{14y + 45}$ D) $\frac{11y + 2}{14y + 3}$

170) $\frac{y^2 - 3y - 10}{y^2 + 4y - 45}$ 170) ____

A) $\frac{-3y - 10}{4y - 45}$ B) $\frac{-3y - 2}{4y - 9}$ C) $\frac{y + 2}{y + 9}$ D) $-\frac{y^2 - 3y - 10}{y^2 + 4y - 45}$

171) $\frac{y^2 + 3y - 28}{y^2 + 2y - 35}$ 171) ____

A) $\frac{y - 4}{y - 5}$ B) $\frac{3y - 4}{2y - 5}$ C) $-\frac{y^2 + 3y - 28}{y^2 + 2y - 35}$ D) $\frac{3y - 28}{2y - 35}$

172) $\frac{4x + 20}{3x^2 + 22x + 35}$ 172) ____

A) $\frac{4x}{3x + 7}$ B) $\frac{4}{3x + 7}$ C) $\frac{4x + 20}{3x^2 + 22x + 35}$ D) $\frac{4x + 3}{3x + 22}$

173) $\frac{4k - 20}{25 - 5k}$ 173) ____

A) $-\frac{4}{5}$ B) 1 C) $\frac{4}{5}$ D) -1

174) $\frac{(y + 7)(7 - y)}{(-y + 7)(7 + y)}$ 174) ____

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

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

175) $\frac{2x^2}{5} \cdot \frac{25}{x^3}$ 175) ____

A) $\frac{x}{10}$ B) $\frac{50x^2}{5x^3}$ C) $\frac{10x^2}{x^3}$ D) $\frac{10}{x}$

176) $\frac{3p - 3}{p} \cdot \frac{3p^2}{6p - 6}$ 176) ____

A) $\frac{2}{3p}$ B) $\frac{18p^2 + 36p + 18}{3p^3}$

C) $\frac{9p^3 - 9p^2}{6p^2 - 6p}$ D) $\frac{3p}{2}$

177) $\frac{3z^3}{4} \cdot \frac{8}{z^2}$ 177) ____

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

178) $\frac{k^2 + 10k + 16}{k^2 + 17k + 72} \cdot \frac{k^2 + 9k}{k^2 - 2k - 8}$ 178) ____

A) $\frac{1}{k - 4}$ B) $\frac{k}{k - 4}$ C) $\frac{k^2 + 9k}{k - 4}$ D) $\frac{k}{k^2 + 17k + 72}$

179) $\frac{k^2 + 15k + 54}{k^2 + 16k + 63} \cdot \frac{k^2 + 7k}{k^2 + 9k + 18}$ 179) ____

A) $\frac{k}{k + 3}$ B) $\frac{k}{k^2 + 16k + 63}$ C) $\frac{k^2 + 7k}{k + 3}$ D) $\frac{1}{k + 3}$

180) $\frac{k^2 + 8k + 15}{k^2 + 12k + 35} \cdot \frac{k^2 + 13k + 42}{k^2 + 9k + 18}$ 180) ____

A) $\frac{k + 7}{k + 6}$ B) $\frac{1}{k + 6}$ C) $\frac{k + 3}{k + 7}$ D) 1

181) $\frac{2x^2}{5} \div \frac{x^3}{30}$ 181) ____

A) $\frac{12x^2}{x^3}$ B) $\frac{60x^2}{5x^3}$ C) $\frac{12}{x}$ D) $\frac{x}{12}$

182) $\frac{5p - 5}{p} \div \frac{7p - 7}{8p^2}$ 182) ____

A) $\frac{40p}{7}$

B) $\frac{40p^3 - 40p^2}{7p^2 - 7p}$

C) $\frac{7}{40p}$

D) $\frac{35p^2 + 70p + 35}{8p^3}$

183) $\frac{z^2 + 6z + 9}{z^2 + 12z + 27} \div \frac{z^2 + 3z}{z^2 + 13z + 36}$ 183) ____

A) $\frac{z + 4}{z^2 + 9z}$ B) $\frac{z + 4}{z}$ C) $\frac{z}{z^2 + 12z + 27}$ D) $z + 4$

184) $\frac{z^2 + 5z + 6}{z^2 + 8z + 12} \div \frac{z^2 + 3z}{z^2 + 3z - 18}$ 184) ____

A) $\frac{z - 3}{z}$ B) $\frac{z}{z^2 + 8z + 12}$ C) $z - 3$ D) $\frac{z - 3}{z^2 + 6z}$

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

185) $\frac{3}{r} + \frac{7}{r - 5}$ 185) ____

A) $\frac{10r - 15}{r(5 - r)}$ B) $\frac{15r - 10}{r(5 - r)}$ C) $\frac{10r - 15}{r(r - 5)}$ D) $\frac{15r - 10}{r(r - 5)}$

186) $\frac{3}{r} + \frac{5}{r + 7}$ 186) ____

A) $\frac{-21r - 8}{r(r + 7)}$ B) $\frac{8r + 21}{r(r + 7)}$ C) $\frac{-21r - 8}{r(-7 - r)}$ D) $\frac{8r + 21}{r(-7 - r)}$

187) $\frac{m - 2}{m^2 - 6m + 5} + \frac{5m + 7}{m^2 - 4m + 3}$ 187) ____

A) $\frac{6m^2 - 23m - 29}{(m - 1)(m - 5)(m - 3)}$

B) $6m + 5$

C) $\frac{6m^2 - 23m - 29}{(m + 1)(m + 5)(m + 3)}$

D) $\frac{6m + 5}{2m^2 - 10m + 8}$

188) $\frac{4}{y^2 - 3y + 2} + \frac{5}{y^2 - 1}$ 188) ____

A) $\frac{40y - 6}{(y - 1)(y + 1)(y - 2)}$

B) $\frac{6y - 9}{(y - 1)(y + 1)(y - 2)}$

C) $\frac{9y - 6}{(y - 1)(y + 1)(y - 2)}$

D) $\frac{9y - 6}{(y - 1)(y - 2)}$

189) $\frac{x}{x^2 - 16} - \frac{8}{x^2 + 5x + 4}$ 189) ____

A) $\frac{x^2 - 7x + 32}{(x - 4)(x + 4)(x + 1)}$ B) $\frac{x^2 - 7}{(x - 4)(x + 4)(x + 1)}$

C) $\frac{x^2 - 7x + 32}{(x - 4)(x + 4)}$ D) $\frac{x^2 + 7x + 32}{(x - 4)(x + 4)(x + 1)}$

190) $\frac{8}{z^2} - \frac{6}{z}$ 190) ____

A) $\frac{2(3z - 4)}{z}$ B) $\frac{2(4 - 3z)}{z^2}$ C) $\frac{2(4z + 3)}{z^2}$ D) $\frac{2(4 + 3z)}{z^2}$

191) $\frac{x}{7} + \frac{8}{9}$ 191) ____

A) $\frac{9x - 56}{56}$ B) $\frac{x + 8}{63}$ C) $\frac{9x + 56}{63}$ D) $\frac{x + 8}{16}$

192) $-\frac{4}{27} - \frac{3}{6x}$ 192) ____

A) $\frac{8x - 27}{54x}$ B) $\frac{-8x + 27}{54x}$ C) $\frac{-8x - 27}{54x}$ D) $\frac{-11}{54 - 6x}$

193) $\frac{2 - 2y}{36} - \frac{4 - 9y}{30}$ 193) ____

A) $\frac{-32y + 17}{90}$ B) $\frac{22y - 7}{90}$ C) $\frac{-32y - 7}{90}$ D) $\frac{22y + 17}{90}$

194) $\frac{-5x + 5}{x} + \frac{7x - 6}{2x}$ 194) ____

A) $\frac{-17x + 4}{2x}$ B) $\frac{-3x + 4}{2x^2}$ C) $\frac{-3x - 16}{2x}$ D) $\frac{-3x + 4}{2x}$

195) $\frac{7a + 9b}{2} - \frac{7a - 9b}{2}$ 195) ____

A) 81b B) 7a C) 0 D) 9b

196) $\frac{5x}{x + 8} + \frac{4x - 6}{x + 8} - \frac{6x}{x + 8}$ 196) ____

A) $\frac{15x + 6}{x - 8}$ B) $\frac{3x - 6}{3x + 24}$ C) $\frac{15x - 6}{x + 8}$ D) $\frac{3x - 6}{x + 8}$

197) $\frac{4x + 8}{x + 9} - \frac{7x + 5}{x + 9} - \frac{3x}{x + 9}$ 197) ____

A) $\frac{-6x + 3}{x + 9}$ B) $\frac{-14x + 13}{x + 9}$ C) $\frac{-6x + 3}{3x + 27}$ D) $\frac{x + 3}{x + 27}$

198) $\frac{b}{b^2 - 25} + \frac{5}{b + 5} - \frac{6}{b}$ 198) ____

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

199) $\frac{5}{2x - 4} - \frac{4}{3x + 3} + \frac{4}{5x + 10}$ 199) ____

A) $\frac{59x^2 + 201x + 13}{10x + 17}$ B) $\frac{59x^2 + 201x + 262}{30(x - 2)(x + 1)(x + 2)}$

C) $\frac{139x^2 + 201x + 262}{30(x - 2)(x + 1)(x + 2)}$ D) $\frac{139x^2 + 201x + 262}{10x + 17}$

200) $\frac{9x}{4(3x + 1)} - \frac{1}{4x(3x + 1)} + \frac{4}{x}$ 200) ____

A) $\frac{3(x + 5)}{4x}$ B) $\frac{9x^2 + 48x + 15}{4x}$ C) $\frac{9x^2 + 48x + 15}{12x2 + 4x}$ D) $\frac{3(x + 5)}{12x^2 + 4x}$

201) $\frac{-9x}{2(3x + 1)} + \frac{1}{2x(3x + 1)} - \frac{11}{x}$ 201) ____

A) $-\frac{3(x + 7)}{6x^2 + 2x}$ B) $\frac{-9x^2 - 66x - 21}{6x^2 + 2x}$

C) $\frac{-9x^2 - 66x - 21}{2x}$ D) $-\frac{3(x + 7)}{2x}$

Simplify the complex fraction.

202) $\frac{\frac{1}{a} + 1}{\frac{1}{a} - 1}$ 202) ____

A) 1 B) $\frac{1 + a}{1 - a}$ C) $1 - a^2$ D) $\frac{a}{1 - a^2}$

203) $\dfrac{4 + \frac{2}{x}}{\frac{x}{4} + \frac{1}{8}}$ 203) ____

A) $\frac{x}{16}$ B) 16 C) $\frac{16}{x}$ D) 1

204) $\dfrac{9 + \frac{3}{s}}{\frac{s}{4} + \frac{1}{12}}$ 204) ____

A) 36 B) $\frac{s}{36}$ C) 1 D) $\frac{36}{s}$

205) $\dfrac{\frac{x}{x + 7}}{\frac{9}{x^2 - 49}}$ 205) ____

A) $\frac{9(x + 7)}{x}$ B) $\frac{x(x + 7)}{9}$ C) $\frac{9(x - 7)}{x}$ D) $\frac{x(x - 7)}{9}$

206) $\dfrac{\frac{1}{y + 4} - 5}{\frac{2}{y + 4} + 5}$ 206) ____

A) $\frac{-5y - 19}{5y + 22}$ B) $\frac{-5y + 21}{5y + 22}$ C) $\frac{5y + 21}{5y + 22}$ D) $\frac{5y + 19}{5y + 22}$

207) $\dfrac{\frac{1}{k + 6}}{\frac{3}{k^2 - 36}}$ 207) ____

A) k - 6 B) $\frac{k + 6}{3}$ C) $\frac{3}{k - 6}$ D) $\frac{k - 6}{3}$

208) $\dfrac{\frac{4}{3r - 1} - 4}{\frac{4}{3r - 1} + 4}$ 208) ____

A) $\frac{3r}{2 - 3r}$ B) $\frac{2 + 3r}{3r}$ C) $\frac{2 - 3r}{3r}$ D) $\frac{2 - r}{r}$

209) $\dfrac{\dfrac{3}{x-3}+\dfrac{-5}{x-5}}{\dfrac{-5}{x-5}-\dfrac{3}{x+4}}$ 209) ____

A) $\dfrac{-2x^2-8x}{-8x^2+19x+15}$ B) $\dfrac{-2x^2-8x}{-2x^2-13x+15}$

C) $\dfrac{-(x+4)}{x-3}$ D) $\dfrac{-2x^2-22+120}{-2x^2-1x+15}$

210) $\dfrac{\dfrac{3}{x-4}+\dfrac{5}{x+3}}{\dfrac{-5}{x+2}-\dfrac{2}{x-4}}$ 210) ____

A) $\dfrac{3x+33}{-12x+10}$ B) $\dfrac{8x^2+5x-22}{-7x^2-5x+48}$

C) $\dfrac{8x^2+45x+58}{10x^2-15x+48}$ D) $\dfrac{8x^2+5x-22}{-3x^2+71x+9}$

Solve the problem.

211) If the average cost per unit C to produce x units of plywood is given by $C = \dfrac{900}{x+30}$, what is the unit cost for 50 units? 211) ____

A) \$11.25 B) \$0.60 C) \$18.00 D) -\$12.00

212) The cost of producing x thousand units of a certain product is given by $C = -5.8x^2 + 4807x + 200{,}000$, 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 30,000 units are produced. 212) ____

A) $\dfrac{-5.8x^2+4807x+200{,}000}{x}$; \$11,299.67 B) $\dfrac{-5.8x^2+4807x+200{,}000}{1000x}$; \$11.30

C) $\dfrac{-5.8x^2+4807x+200{,}000}{x}$; \$11.30 D) $\dfrac{-5.8x^2+4807x+200{,}000}{1000x}$; \$162.53

Evaluate the expression. Write answer without exponents.

213) 4^0 213) ____

A) 0 B) 4 C) 1 D) -1

214) -5^0 214) ____

A) 1 B) -5 C) -1 D) 0

215) $(-13)^0$ 215) ____

A) -1 B) -13 C) 0 D) 1

216) 5^{-3} 216) ____

A) 125 B) $\frac{1}{125}$ C) -125 D) $\frac{1}{-125}$

217) -4^{-3} 217) ____

A) -64 B) 64 C) $\frac{1}{64}$ D) $-\frac{1}{64}$

218) $\left(\frac{1}{2}\right)^{-3}$ 218) ____

A) $\frac{3}{2}$ B) $\frac{1}{-6}$ C) 0.13 D) 8

219) $(8.82)^{-3}$ 219) ____

A) 26.46 B) 0.00146 C) 686.12897 D) 2.06612

220) $(19.5)^{-3}$ 220) ____

A) 2.69161 B) 7414.875 C) 58.5 D) 0.00013

221) $100^{1/2}$ 221) ____

A) 5 B) 20 C) 40 D) 10

222) $81^{1/4}$ 222) ____

A) 243 B) 3 C) 12 D) 36

223) $-32^{1/5}$ 223) ____

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

224) $\left(\frac{9}{16}\right)^{1/2}$ 224) ____

A) $\frac{2}{4}$ B) $\frac{3}{5}$ C) $\frac{2}{5}$ D) $\frac{3}{4}$

225) $27^{4/3}$ 225) ____

A) 729 B) 243 C) 81 D) 2187

226) $243^{4/5}$ 226) ____

A) 6561 B) 19,683 C) 81 D) 2187

227) $\left(\frac{8}{64}\right)^{2/3}$ 227) ____

A) $-\frac{1}{4}$ B) $\frac{1}{6}$ C) $\frac{1}{4}$ D) $\frac{1}{2}$

228) $(12.23)^{1/2}$ 228) ____

A) 24.46 B) 3.49714 C) 0.00669 D) 149.5729

229) $\left(\frac{27}{8}\right)^{-2/3}$ 229) ____

A) $\frac{4}{13}$ B) $\frac{4}{9}$ C) $-\frac{4}{9}$ D) $\frac{3}{4}$

Simplify the expression. Write answer with positive exponents.

230) $\frac{3^{-4}}{3^{-8}}$ 230) ____

A) 3^{-18} B) $\frac{1}{3^4}$ C) 3^4 D) 3^{-12}

231) $\frac{9^{-15}}{9^{-3}}$ 231) ____

A) $\frac{1}{9^9}$ B) $\frac{1}{9^{12}}$ C) $\frac{1}{9^{-12}}$ D) $\frac{1}{9^{18}}$

232) $\frac{81^5}{9^5}$ 232) ____

A) $\frac{1}{9^5}$ B) 9 C) 9^5 D) 9^{10}

233) $\frac{243^5 \cdot 3^{-3}}{9^5}$ 233) ____

A) 27^{12} B) 3^{12} C) 3^5 D) 1

234) $5^{-3} \cdot 5^8$ 234) ____

A) 5^5 B) 25^{24} C) 25^5 D) 5^{-24}

235) $\frac{2^9}{2^4}$ 235) ____

A) 2^{13} B) 2^5 C) $\frac{1}{2^5}$ D) $\frac{1}{2^{13}}$

236) $\frac{8^{-1}}{8^3}$ 236) ____

A) 8^2 B) $\frac{1}{8^2}$ C) 8^4 D) $\frac{1}{8^4}$

237) $\frac{4^2}{4^{-7}}$ 237) ____

A) 4^5 B) $\frac{1}{4^9}$ C) 4^9 D) $\frac{1}{4^5}$

238) $\frac{4^{-6}}{4^{-3}}$ 238) ____

A) 4^9 B) 4^3 C) $\frac{1}{4^3}$ D) $\frac{1}{4^9}$

239) $\frac{6^{-7}}{6^{-6}}$ 239) ____

A) 6^1 B) -6^1 C) 6^{-1} D) $\frac{1}{6^1}$

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

240) $x^{1/7}x^{6/7}$ 240) ____

A) $\frac{1}{x}$ B) $x^{6/7}$ C) $x^{6/49}$ D) x

241) $\frac{y^{8/6}}{y^{5/6}}$ 241) ____

A) $y^{8/6}$ B) y C) $\frac{1}{y}$ D) $y^{1/2}$

242) $(b^7)^{2/7}$ 242) ____

A) $b^{9/7}$ B) b^2 C) $b^{2/49}$ D) $b^{1/7}$

243) $z^{-2/7}z^{3/7}$ 243) ____

A) $z^{1/7}$ B) $z^{6/7}$ C) $z^{-1/7}$ D) $z^{7/6}$

244) $\left[\frac{x^4}{y^{-8}}\right]^{1/4}$ 244) ____

A) $\frac{x}{y^2}$ B) xy^2 C) $xy^{1/2}$ D) xy

245) $(32k^5m^{-10})^{1/5}$ 245) ____

A) $\frac{5k}{m^2}$ B) $2km^2$ C) $5km^2$ D) $\frac{2k}{m^2}$

246) $\left(\frac{r^{-7/3}}{s^{-7/2}}\right)^2(r^{-1/4}s^{-1/5})^{-4}$ 246) ____

A) $\frac{s^{39/5}}{r^{11/3}}$ B) $\frac{r^{11/3}}{s^{39/5}}$ C) $\frac{s^{31/5}}{r^{17/3}}$ D) $\frac{r^{17/3}}{s^{31/5}}$

247) $\left(\frac{b^{-8/5}}{t^{-8/7}}\right)^4(b^{-1/8}t^{1/7})^{-2}$ 247) ____

A) $\frac{b^{123/20}}{t^{30/7}}$ B) $\frac{t^{34/7}}{b^{133/20}}$ C) $\frac{b^{133/20}}{t^{34/7}}$ D) $\frac{t^{30/7}}{b^{123/20}}$

248) $y^{2/9}(y^{5/9} - 6y^{4/9})$ 248) ____

A) $y^{7/9} - 6y^{2/3}$ B) $y^{2/5} - 6y^{1/2}$

C) $y^{10/81} - 6y^{8/81}$ D) $y^{-1/3} - 6y^{-2/9}$

249) $-7k^{2/7}(-4k^{3/7} + 9k^{6/7})$ 249) ____

A) $28k^{5/7} - 63k^{8/7}$ B) $-11k^{5/7} - 16k^{8/7}$

C) $28k^{-1/7} + 63k^{-4/7}$ D) $28k^{5/7} + 63k^{8/7}$

Write the rational exponent expression as an equivalent radical expression.

250) $(-5x)^{1/5}$ 250) ____

A) $\sqrt[5]{5x}$ B) $\frac{5}{\sqrt[5]{x}}$ C) $\sqrt[5]{-5x}$ D) $-5\sqrt[5]{x}$

251) $-3x^{1/3}$ 251) ____

A) $\sqrt[3]{3x}$ B) $-3\sqrt[3]{x}$ C) $\sqrt[3]{-3x}$ D) $\frac{3}{\sqrt[3]{x}}$

252) $(-3x)^{-1/3}$ 252) ____

A) $3\sqrt[3]{x}$ B) $\frac{1}{\sqrt[3]{-3x}}$ C) $\frac{-3}{\sqrt[3]{x}}$ D) $\frac{1}{\sqrt[3]{3x}}$

253) $-3x^{-1/3}$ 253) ____

A) $\frac{1}{\sqrt[3]{-3x}}$ B) $\frac{1}{\sqrt[3]{3x}}$ C) $\frac{-3}{\sqrt[3]{x}}$ D) $3\sqrt[3]{x}$

254) $(5x)^{1/5}$ 254) ____

A) $\frac{5}{\sqrt[5]{x}}$ B) $-5\sqrt[5]{x}$ C) $\sqrt[5]{-5x}$ D) $\sqrt[5]{5x}$

255) $5x^{-1/5}$ 255) ____

A) $\sqrt[5]{-5x}$ B) $-5\sqrt[5]{x}$ C) $\sqrt[5]{5x}$ D) $\frac{5}{\sqrt[5]{x}}$

256) $(7x)^{-1/7}$ 256) ____

A) $7\sqrt[7]{x}$ B) $\frac{1}{\sqrt[7]{-7x}}$ C) $\frac{1}{\sqrt[7]{7x}}$ D) $\frac{-7}{\sqrt[7]{x}}$

257) $3x^{-1/3}$ 257) ____

A) $\frac{-3}{\sqrt[3]{x}}$ B) $\frac{1}{\sqrt[3]{3x}}$ C) $\frac{3}{\sqrt[3]{x}}$ D) $\frac{1}{\sqrt[3]{-3x}}$

Simplify the expression.

258) $\sqrt[3]{3^9}$ 258) ____

A) 27 B) 9 C) $\sqrt[3]{3^9}$ D) 81

259) $\sqrt{21} \cdot \sqrt{16}$ 259) ____

A) $16\sqrt{21}$ B) $4\sqrt{21}$ C) $\sqrt{37}$ D) 37

260) $\sqrt[3]{64} \cdot \sqrt[3]{512}$ 260) ____

A) -32 B) 32 C) -4 D) 12

261) $\sqrt[4]{8} \cdot \sqrt[4]{8}$ 261) ____

A) $2\sqrt[4]{4}$ B) $\sqrt[4]{64}$ C) $4\sqrt{2}$ D) $2\sqrt[4]{2} + 2\sqrt[4]{2}$

262) $\sqrt[3]{-8}$ 262) ____

A) -2 B) -4 C) 4 D) 2

263) $\sqrt{6}(\sqrt{294} - \sqrt{54})$ 263) ____

A) 24 B) $6\sqrt{7} - 18$ C) $36 - 6\sqrt{3}$ D) 60

264) $(\sqrt{10} + 1)(\sqrt{10} - 1)$ 264) ____

A) $9 + 2\sqrt{10}$ B) 11 C) 9 D) $9 - 2\sqrt{10}$

265) $(\sqrt{2} + 6)(\sqrt{7} + 4)$ 265) ____

A) $\sqrt{14} + 4\sqrt{2} + 6\sqrt{7} + 24$ B) $\sqrt{14} + 24$

C) $11\sqrt{14} + 24$ D) $\sqrt{14} + 10\sqrt{7} + 24$

266) $\sqrt{81 - 4}$ 266) ____

A) $\sqrt{77}$ B) 79 C) $\sqrt{79}$ D) 77

267) $\sqrt{81} - \sqrt{16}$ 267) ____

A) 65 B) 77 C) 13 D) 5

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

268) $\frac{2}{9 - \sqrt{6}}$ 268) ____

A) $\frac{18 + 2\sqrt{6}}{75}$ B) $\frac{18 + 2\sqrt{6}}{-3}$ C) $\frac{18 - 2\sqrt{6}}{75}$ D) $\frac{2}{9} - \frac{2}{\sqrt{6}}$

269) $\frac{\sqrt{5}}{\sqrt{3} + 4}$ 269) ____

A) $\frac{\sqrt{15} + 4\sqrt{5}}{-13}$ B) $\frac{\sqrt{15} - 4\sqrt{5}}{7}$ C) $\frac{3\sqrt{15} + 35}{12}$ D) $\frac{\sqrt{15} - 4\sqrt{5}}{-13}$

270) $\frac{7 - \sqrt{6}}{7 + \sqrt{6}}$ 270) ____

A) $\frac{55 - 14\sqrt{6}}{43}$ B) 1 C) $\frac{43 - 14\sqrt{6}}{55}$ D) $\frac{55 + 14\sqrt{6}}{43}$

271) $\frac{\sqrt{6}}{6\sqrt{7} - \sqrt{6}}$ 271) ____

A) $\frac{1}{41}(\sqrt{7} + 1)$ B) $\frac{1}{41}(\sqrt{42} - 1)$ C) $\frac{1}{41}(\sqrt{42} + 1)$ D) $\frac{1}{43}(\sqrt{42} + 1)$

Solve the problem.

272) 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. Find the cost when 64 parts are produced. 272) ____

A) \$2600 B) \$800 C) \$1400 D) \$75

273) 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. How many parts are produced when the cost is $3800? 273) ____

A) 5832 B) 3600 C) 46,656 D) 324

274) 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? 274) ____

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

275) The time T in seconds for a pendulum of length L feet to make one swing is given by $T = 2\pi\sqrt{\frac{L}{44}}$. 275) ____

How long is a pendulum (to nearest hundredth) if it makes one swing in 1.5 seconds? Use 3.14 for π.

A) 24.75 ft B) 99 ft C) 2.51 ft D) 15.76 ft

276) The radius of a sphere depends on its surface area, S, and is given by the formula 276) ____

$r = \sqrt{\frac{S}{4\pi}}$.

What is the surface area of a sphere with radius of 8.6 inches?
Use 3.14 for π.

A) 928.9 square inches B) 108 square inches
C) 232.2 square inches D) 27 square inches

277) The length a spring is stretched from its natural length with work, W foot-pounds, is given by 277) ____

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

where k is a constant for the given spring. If a certain spring has a constant of 66.5, and the spring is to be stretched 4.5 feet from its natural length, how much work will be necessary?

A) 149.6 foot-pounds B) 70.5 foot-pounds
C) 1346.6 foot-pounds D) 673.3 foot-pounds

Solve the equation.

278) $12x - 4 = 5$ 278) ____

A) $\frac{2}{3}$ B) $\frac{3}{4}$ C) $-\frac{3}{4}$ D) $\frac{1}{12}$

279) $38s + 25 = 8s$ 279) ____

A) $\frac{5}{6}$ B) $\frac{6}{5}$ C) $\frac{25}{46}$ D) $-\frac{5}{6}$

280) $27t + 5 = 13t + 13$ 280) ____

A) $\frac{10}{3}$ B) $-\frac{4}{7}$ C) $\frac{20}{9}$ D) $\frac{4}{7}$

281) $25b + 20 = 13b$ 281) ____

A) $\frac{5}{3}$ B) $\frac{10}{19}$ C) $-\frac{3}{5}$ D) $-\frac{5}{3}$

282) $-2x + 13 - 3x = -6x + 20$ 282) ____

A) -7 B) $\frac{1}{7}$ C) $-\frac{11}{7}$ D) 7

283) $-2.4y = 18.48$ 283) ____

A) -16.08 B) 20.88 C) 7.7 D) -7.7

284) $-7.2q = -43.2 - 1.8q$ 284) ____

A) 8 B) 6.0 C) -49 D) 6.3

285) $-7.3q + 1.3 = -10.3 - 1.5q$ 285) ____

A) 1.6 B) -17 C) 2 D) 1.8

286) $-6.7 = y + 9.6$ 286) ____

A) -2.9 B) 2.9 C) -16.3 D) 16.3

287) $-9 = z - 1.8$ 287) ____

A) -7.2 B) -10.8 C) 7.2 D) 10.8

288) $15(7c - 8) = 5c - 5$ 288) ____

A) $\frac{23}{20}$ B) $-\frac{23}{20}$ C) $\frac{25}{4}$ D) $\frac{23}{110}$

289) $3(4r - 1) = 5$ 289) ____

A) $\frac{0}{3}$ B) $\frac{4}{3}$ C) $\frac{2}{3}$ D) $\frac{8}{3}$

290) $5(y + 2) = 6(y - 5)$ 290) ____

A) 20 B) -40 C) 40 D) -20

291) $3(2z - 2) = 5(z + 2)$ 291) ____

A) -4 B) 4 C) 7 D) 16

292) $\frac{p}{4} - \frac{3p}{8} = 2$ 292) ____

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

293) $\frac{r+6}{3} = \frac{r+8}{6}$ 293) ____

A) 4 B) -12 C) 3 D) -4

294) $\frac{a}{4} - \frac{1}{4} = -2$ 294) ____

A) 9 B) -9 C) -7 D) 7

295) $\frac{y}{19} - 1 = 3$ 295) ____

A) -76 B) -78 C) 78 D) 76

296) $\frac{b}{11} - 10 = -4$ 296) ____

A) -66 B) -68 C) 66 D) 68

297) $\frac{5x+3}{2} + \frac{7}{2} = -\frac{2x}{7}$ 297) ____

A) $-\frac{70}{31}$ B) $-\frac{28}{39}$ C) $-\frac{70}{39}$ D) $\frac{28}{39}$

298) $\frac{2}{t} = \frac{t}{-2t+6}$ 298) ____

A) $\varnothing$ B) 0, 4 C) -6, 2 D) 0, $\frac{-6}{2}$

299) $\frac{18}{x-4} = 1 + \frac{20}{x+4}$ 299) ____

A) -20, 14 B) $\varnothing$ C) -12, 14 D) 12, -14

300) $\frac{2y+3}{y} = \frac{3}{2}$ 300) ____

A) 0 B) 6 C) -6 D) $\sqrt{2}$

301) $1 - \frac{3}{2x} = \frac{7}{4}$ 301) ____

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

302) $\frac{5-a}{a} + \frac{3}{4} = \frac{7}{a}$ 302) ____

A) -4 B) 8 C) $\sqrt{\frac{29}{20}}$ D) -8

303) $\frac{4}{x} + \frac{7}{8} = 1$ 303) ____

A) 8 B) $\frac{11}{8}$ C) 11 D) 32

304) $\frac{-2}{x + 7} - \frac{-5}{x - 8} = 0$ 304) ____

A) - 17 B) $\frac{1}{7}, -\frac{1}{8}$ C) $\frac{19}{7}$ D) -7, 8

305) $\frac{x}{2x + 2} - \frac{-2x}{4x + 4} - \frac{2x - 3}{x + 1} = 0$ 305) ____

A) -3 B) $-\frac{12}{5}$ C) 3 D) $\frac{3}{2}$

Use a calculator to solve the equation. Round to the nearest hundredth.

306) -3.96a + 2.28 + 4.96a = 6.92 - 26.44 306) ____

A) 35.64 B) -35.64 C) -21.80 D) 21.80

307) 1.37(2.6 + 3.9x) = 1.51x + 3.4969 307) ____

A) -0.01 B) 1.03 C) -0.02 D) 1.84

308) $\frac{1.56x - 4.27}{1.38} - \frac{2.41x - 3.93}{3.63} = x$ 308) ____

A) 0.06 B) -3.77 C) 0.04 D) -0.08

309) -0.44x - 3.05(4.7 + 3.1x) = -1.56x + 2.6111 309) ____

A) 1.41 B) -1.48 C) -2.03 D) 1.02

310) $\frac{3.69x + 3.04}{2.06} - \frac{1.54x - 3.26}{2.07} = x$ 310) ____

A) -0.02 B) 0.03 C) -0.10 D) -64.49

Solve the equation for x.

311) 5(x - a) + b = 6x + a 311) ____

A) x = -6a + b B) x = 5a + b C) $x = \frac{6a - b}{11}$ D) x = 6a - b

312) ax - b = 6(x + a) 312) ____

A) $x = \frac{6a + b}{a + 6}$ B) $x = \frac{6a - b}{a - 6}$ C) $x = \frac{a + b}{a - 6}$ D) $x = \frac{6a + b}{a - 6}$

313) $a^2x - 2x = 3a^2$ 313) ____

A) $x = \frac{3a^2}{a^2 + 2}$ B) $x = \frac{3}{2}$ C) $x = \frac{3a^2}{a^2 - 2}$ D) $x = -\frac{3}{2}$

314) $x = (3x - 4)(2k + 1)$ 314) ____

A) $x = \frac{8k - 4}{6k + 2}$ B) $x = \frac{8k + 4}{6k + 4}$ C) $x = \frac{8k + 4}{6k + 2}$ D) $x = \frac{8k + 4}{6k - 2}$

315) $\frac{5a}{x + 1} = a - 3b$ 315) ____

A) $x = \frac{4a - 3b}{a - 3b}$ B) $x = \frac{6a + 3b}{a - 3b}$ C) $x = \frac{5a - 1}{a - 3b}$ D) $x = \frac{4a + 3b}{a - 3b}$

316) $6x - (4a + 8) = a(x + 1)$ 316) ____

A) $x = \frac{3a + 8}{6 - a}$ B) $x = \frac{5a + 8}{6 - a}$ C) $x = \frac{5a - 8}{6 - a}$ D) $x = \frac{3a - 8}{6 - a}$

317) $12x + 1 = (4x - 1)(m + 3)$ 317) ____

A) $x = \frac{m + 4}{4m}$ B) $x = \frac{m + 2}{4m}$ C) $x = \frac{4 - m}{4m}$ D) $x = \frac{m + 4}{24 + 4m}$

Solve the formula for the specified variable.

318) $A = \frac{1}{2}bh$ for b 318) ____

A) $b = \frac{A}{2h}$ B) $b = \frac{Ah}{2}$ C) $b = \frac{h}{2A}$ D) $b = \frac{2A}{h}$

319) $S = 2\pi rh + 2\pi r^2$ for h 319) ____

A) $h = \frac{S}{2\pi r} - 1$ B) $h = S - r$ C) $h = 2\pi(S - r)$ D) $h = \frac{S - 2\pi r^2}{2\pi r}$

320) $V = \frac{1}{3}Bh$ for h 320) ____

A) $h = \frac{3B}{V}$ B) $h = \frac{3V}{B}$ C) $h = \frac{V}{3B}$ D) $h = \frac{B}{3V}$

321) $I = \frac{nE}{nr + R}$ for n 321) ____

A) $n = IR(Ir - E)$ B) $n = \frac{IR}{Ir + E}$ C) $n = \frac{-IR}{Ir - E}$ D) $n = \frac{-R}{Ir - E}$

322) $P = s_1 + s_2 + s_3$ for s_1 322) ____

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) $s_1 = P + s_2 + s_3$

323) $F = \frac{9}{5}C + 32$ for C 323) ____

A) $C = \frac{5}{F - 32}$ B) $C = \frac{F - 32}{9}$ C) $C = \frac{9}{5}(F - 32)$ D) $C = \frac{5}{9}(F - 32)$

324) $A = \frac{1}{2}h(b_1 + b_2)$ for b_1 324) ____

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) $b_1 = \frac{h(b_2) - 2A}{h}$

325) $a + b = s + r$ for r 325) ____

A) $r = s(a + b)$ B) $r = \frac{a}{s} + b$ C) $r = \frac{a + b}{s}$ D) $r = a + b - s$

326) $A = P(1 + nr)$ for r 326) ____

A) $r = \frac{A - P}{Pn}$ B) $r = \frac{P - A}{Pn}$ C) $r = \frac{Pn}{A - P}$ D) $r = \frac{A}{n}$

Solve the equation.

327) $|3s - 1| = |s + 3|$ 327) ____

A) $2, -\frac{1}{2}$ B) 2 C) $-2, \frac{1}{2}$ D) No solution

328) $|4s + 9| = |s - 3|$ 328) ____

A) -4 B) $-4, -\frac{6}{5}$ C) No solution D) $4, \frac{6}{5}$

329) $|2s - 4| = |s + 6|$ 329) ____

A) $10, -14$ B) $-10, 2$ C) $10, -\frac{2}{3}$ D) No solution

330) $|5x + 3| = 2$ 330) ____

A) $-1, -5$ B) $5, 1$ C) $1, \frac{1}{5}$ D) $-\frac{1}{5}, -1$

331) $\left|\frac{3x + 1}{x - 1}\right| = 5$ 331) ____

A) $\frac{3}{4}, 2$ B) $-2, -8$ C) $3, \frac{1}{2}$ D) $6, 4$

332) $\left|\frac{4}{y - 3}\right| = 5$ 332) ____

A) $8, -2$ B) $\frac{19}{5}, \frac{11}{5}$ C) $19, 11$ D) $-\frac{11}{4}, \frac{11}{4}$

Solve the problem.

333) If Gloria received a 8 percent raise and is now making $24,840 a year, what was her salary before the raise? 333) ____

A) $23,840 B) $23,000 C) $22,840 D) $24,000

334) On Monday, an investor bought 100 shares of stock. On Tuesday, the value of the shares went up 4%. How much did the investor pay for the 100 shares if he sold them Wednesday morning for $ 1352? 334) ____

A) $1300 B) $1406 C) $1302 D) $1350

335) Helen Weller invested $14,000 in an account that pays 12% simple interest. How much additional money must be invested in an account that pays 15% simple interest so that the average return on the two investments amounts to 13%? 335) ____

A) $14,000 B) $7000 C) $11,000 D) $10,000

336) Mardi received an inheritance of $60,000. She invested part at 9% and deposited the remainder in tax-free bonds at 11%. Her total annual income from the investments was $5600. Find the amount invested at 9%. 336) ____

A) $50,000 B) $25,000 C) $54,400 D) $49,000

337) Walt made an extra $7000 last year from a part-time job. He invested part of the money at 10% and the rest at 8%. He made a total of $640 in interest. How much was invested at 8%? 337) ____

A) $5000 B) $3500 C) $3000 D) $4000

338) At the end of the day, a storekeeper had $1070 in the cash register, counting both the sale of goods and the sales tax of 7%. Find the amount of the tax. 338) ____

A) $70 B) $65 C) $60 D) $75

339) Roberto invested some money at 8%, and then invested $4000 more than twice this amount at 11%. His total annual income from the two investments was $3440. How much was invested at 11%? 339) ____

A) $2400 B) $12,000 C) $20,000 D) $24,000

340) The finance charge on a loan taken out by Ivan is $751. If there were 18 equal monthly installments needed to repay the loan, and the loan is paid in full with 15 months remaining, find the amount of unearned interest. (Round answer to the nearest cent.) 340) ____

A) $26.35 B) $527.02 C) $515.39 D) $14.73

341) The finance charge on a loan taken out by Edward is $702. 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 total finance charge paid. (Round answer to the nearest cent.) 341) ____

A) $10.54 B) $691.46 C) $702.00 D) $556.54

342) 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 $262 and the original loan balance is $3610. (Round answer to two decimal places.) 342) ____

A) 9.67% B) 8.09% C) 9.17% D) 10.25%

343) Jay drove 350 kilometers at the average rate of 70 kilometers per hour. How long did the trip take? 343) ____

A) 5 hours B) 4 hours C) 3 hours D) 6 hours

344) Janet drove 385 kilometers and the trip took 5 hours. How fast was Janet traveling? 344) ____

A) 87 kilometers per hour B) 67 kilometers per hour

C) 97 kilometers per hour D) 77 kilometers per hour

345) Jill is 10.5 kilometers away from Joe. Both begin to walk toward each other at the same time. Jill walks at 2.5 kilometers per hour. They meet in 3 hours. How fast is Joe walking? 345) ____

A) 2.5 kilometers per hour B) 3 kilometers per hour

C) 2 kilometers per hour D) 1 kilometers per hour

346) Bert is 32.5 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 5 hours. How fast is Brenda walking? 346) ____

A) 4 kilometers per hour B) 3 kilometers per hour

C) 4.5 kilometers per hour D) 2 kilometers per hour

347) Candy and Delvis are riding bicycles in the same direction. Candy is traveling at the speed of 7 miles per hour, and Delvis is traveling at the speed of 3 miles per hour. In 2 hours what is the distance between them? 347) ____

A) 9 miles B) 8 miles C) 17 miles D) 5 miles

348) From a point on a river, two boats are driving in opposite directions, one at 10 miles per hour and the other at 11 miles per hour. In how many hours will they be 63 miles apart? 348) ____

A) 3 hours B) 5 hours C) 4 hours D) 1 hour

349) Chuck and Dana agree to meet in Chicago for the weekend. Chuck travels 324 miles in the same time that Dana travels 294 miles. If Chuck's rate of travel is 5 mph more than Dana's, and they travel the same length of time, at what speed does Chuck travel? 349) ____

A) 62 mph B) 49 mph C) 46 mph D) 54 mph

350) The speed of a stream is 6 mph. If a boat travels 50 miles downstream in the same time that it takes to travel 25 miles upstream, what is the speed of the boat in still water? 350) ____

A) 21 mph B) 12 mph C) 18 mph D) 20 mph

351) A plane flies 460 miles with the wind and 340 miles against the wind in the same length of time. If the speed of the wind is 30 mph, what is the speed of the plane in still air? 351) ____

A) 205 mph B) 225 mph C) 200 mph D) 190 mph

352) Tom Quig traveled 240 miles east of St. Louis. For most of the trip he averaged 60 mph, but for one period of time he was slowed to 20 mph due to a major accident. If the total time of travel was 8 hours, how many miles did he drive at the reduced speed? 352) ____

A) 115 miles B) 130 miles C) 120 miles D) 140 miles

353) Find the length of a rectangular lot with a perimeter of 132 meters if the length is 8 meters more than the width. (P = 2L + 2W) 353) ____

A) 29 m B) 66 m C) 74 m D) 37 m

354) A square plywood platform has a perimeter which is 11 times the length of a side decreased by 21. Find the length of a side. 354) ____

A) 1 B) 7 C) 10 D) 3

355) A rectangular Persian carpet has a perimeter of 176 inches. The length of the carpet is 18 inches more than the width. What are the dimensions of the carpet? 355) ____

A) 79 inches, 97 inches B) 70 inches, 88 inches

C) 35 inches, 53 inches D) 53 inches, 71 inches

356) A triangle has a perimeter of 60 inches. Its shortest side measures 12 inches shorter than its middle side, and its longest side measures 6 inches longer than its middle side. Find the lengths of the triangle's three sides. 356) ____

A) 10 inches, 22 inches, 28 inches B) 14 inches, 26 inches, 20 inches

C) 26 inches, 14 inches, 20 inches D) 30 inches, 18 inches, 12 inches

357) It is necessary to have a 40% antifreeze solution in the radiator of a certain car. The radiator now has 20 liters of 20% solution. How many liters of this should be drained and replaced with 100% antifreeze to get the desired strength? 357) ____

A) 8 liters B) 5 liters C) 6.7 liters D) 10 liters

358) How many liters of a 10% alcohol solution must be mixed with 80 liters of a 50% solution to get a 20% solution? 358) ____

A) 24 liters B) 320 liters C) 32 liters D) 240 liters

359) In a chemistry class, 5 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? 359) ____

A) 1.5 liters B) 3.5 liters C) 2.5 liters D) 5.0 liters

360) The length of a rectangle is 8 inches more than the width. The perimeter of the rectangle is 188 inches. Find the width of the rectangle. 360) ____

A) 43 in. B) 47 in. C) 45 in. D) 51 in.

361) A sign is in the shape of an isosceles triangle. The third side is 16 inches less than the length of each equal side. Find the length of one equal side if the perimeter is 50 inches. 361) ____

A) 16 in. B) 22 in. C) 25 in. D) 6 in.

362) The length of a rectangular billboard is 5 inches more than the width. The perimeter of the billboard is 98 inches. Find the width of the billboard. 362) ____

A) 24 in. B) 22 in. C) 27 in. D) 5 in.

Provide an appropriate response.

363) Which statement tells how to evaluate 9^4? 363) ____

A) Divide 9 by 4. B) Multiply 9 times 4.

C) Multiply 9 times itself 4 times. D) Multiply 4 times itself 9 times.

364) 16^4 means? 364) ____

A) $16 \div 4$ B) $16 \cdot 16 \cdot 16 \cdot 16$

C) $16 \cdot 4$ D) $16 \cdot 16 \cdot 16 \cdot 16 \cdot 16$

365) Which of the following is the correct way to evaluate the expression $4 + 4 \cdot 2$? 365) ____

A) $4 + 4 \cdot 2 = 4 + 8 = 12$ B) $4 + 4 \cdot 2 = 8 + 8 = 16$

C) $4 + 4 \cdot 2 = 8 + 4 = 12$ D) $4 + 4 \cdot 2 = 8 \cdot 2 = 16$

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

366) What steps would you take to factor $x^2 + 9x + 14$? 366) _____

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

367) $81x^2 - 81$ cannot be factored because there is no x term. Is this statement true? 367) ____

A) No, it is not true. B) Yes, it is true.

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

368) For what values, if any, of x ($x \neq 0$) and n will x^{-n} be a negative number? 368) _____

369) Simplify the expressions $(2x)^0$ and $(2x^0)$ and explain how you arrived at your answers. 369) _____

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

370) A binomial is a polynomial. 370) ____
A) Never B) Always C) Sometimes

371) A trinomial is a polynomial. 371) ____
A) Never B) Sometimes C) Always

372) Decide whether the statement is true or false by using the simplification procedures. $\sqrt{162} = 3\sqrt{18}$ 372) ____
A) True B) False

Use factoring to solve the equation.

373) $(x + 5)(x - 19) = 0$ 373) ____
A) $-19, 5$ B) $-5, 19$ C) $5, -19$ D) $19, 5$

374) $x^2 - 6x + 9 = 16$ 374) ____
A) $-1, -7$ B) $4, -4$ C) $7, -1$ D) 19

375) $r^2 + 4r + 4 = 14$ 375) ____
A) $\sqrt{14}, \sqrt{14}$ B) 12
C) $-2 + \sqrt{14}, -2 - \sqrt{14}$ D) $2 + \sqrt{14}, 2 - \sqrt{14}$

376) $x^2 - x = 42$ 376) ____
A) $6, 7$ B) $1, 42$ C) $-6, -7$ D) $-6, 7$

377) $x^2 + 5x - 66 = 0$ 377) ____
A) $11, -6$ B) $-11, 6$ C) $11, 6$ D) $-11, 1$

378) $5x^2 - 30x + 40 = 0$ 378) ____
A) $5, 2, 4$ B) $-2, -4$ C) $0, 2, 4$ D) $2, 4$

379) $20y^2 + 23y + 6 = 0$ 379) ____
A) $-\frac{3}{4}, -\frac{2}{5}$ B) $\frac{3}{4}, \frac{2}{5}$ C) $\frac{3}{4}, -\frac{2}{5}$ D) $-\frac{3}{20}, -\frac{1}{3}$

380) $25n^2 + 45n = 0$ 380) ____
A) 0 B) $-\frac{9}{5}, 45$ C) $-\frac{9}{5}$ D) $-\frac{9}{5}, 0$

381) $25k^2 - 4 = 0$ 381) ____

A) $\frac{5}{2}, -\frac{5}{2}$ B) $\frac{2}{5}, -\frac{2}{5}$ C) 2, 0 D) $\frac{5}{2}, 0$

382) $5m^2 - 11m = 0$ 382) ____

A) 0 B) $-\frac{11}{5}, 0$ C) $\frac{11}{5}, 0$ D) $\frac{11}{5}, -\frac{11}{5}$

Solve by the square-root property.

383) $(x - 3)^2 = 25$ 383) ____

A) 5, -5 B) 28 C) -2, -8 D) 8, -2

384) $(r + 6)^2 = 11$ 384) ____

A) $-6 + \sqrt{11}, -6 - \sqrt{11}$ B) $6 + \sqrt{11}, 6 - \sqrt{11}$

C) 5 D) $\sqrt{11}, \sqrt{11}$

385) $(x + 4)^2 = 28$ 385) ____

A) $2\sqrt{7} - 4, 2\sqrt{7} + 4$ B) $-4 + 2\sqrt{14}, -4 - 2\sqrt{14}$

C) $2\sqrt{7}, -2\sqrt{7}$ D) $-4 + 2\sqrt{7}, -4 - 2\sqrt{7}$

386) $(x + 16)^2 - 2 = 0$ 386) ____

A) $-4 \pm \sqrt{2}$ B) $-16 \pm \sqrt{2}$ C) $16 \pm \sqrt{2}$ D) -14, 18

Use the quadratic formula to solve the equation. Give both exact and approximate answers.

387) $6m^2 + 10m + 1 = 0$ 387) ____

A) $\frac{-5 \pm \sqrt{19}}{12}$; -0.053, -0.78 B) $\frac{-5 \pm \sqrt{31}}{6}$; 0.095, -1.761

C) $\frac{-10 \pm \sqrt{19}}{6}$; -0.94, -2.393 D) $\frac{-5 \pm \sqrt{19}}{6}$; -0.107, -1.56

388) $5n^2 = -8n - 2$ 388) ____

A) $\frac{-4 \pm \sqrt{6}}{10}$; -0.155, -0.645 B) $\frac{-4 \pm \sqrt{26}}{5}$; 0.22, -1.82

C) $\frac{-8 \pm \sqrt{6}}{5}$; -1.11, -2.09 D) $\frac{-4 \pm \sqrt{6}}{5}$; -0.31, -1.29

389) $7x^2 + 8x = -2$ 389) ____

A) $\frac{-4 \pm \sqrt{2}}{7}$; -0.369, -0.773 B) $\frac{-8 \pm \sqrt{2}}{7}$; -0.941, -1.345

C) $\frac{-4 \pm \sqrt{2}}{14}$; -0.185, -0.387 D) $\frac{-4 \pm \sqrt{30}}{7}$; 0.211, -1.354

390) $4m^2 + 8m + 1 = 0$ 390) ____

A) $\frac{-2 \pm \sqrt{3}}{2}$; -0.134, -1.866 B) $\frac{-2 \pm \sqrt{5}}{2}$; 0.118, -2.118

C) $\frac{-2 \pm \sqrt{3}}{8}$; -0.033, -0.467 D) $\frac{-8 \pm \sqrt{3}}{2}$; -3.134, -4.866

391) $6n^2 = -10n - 2$ 391) ____

A) $\frac{-5 \pm \sqrt{13}}{6}$; -0.232, -1.434 B) $\frac{-10 \pm \sqrt{13}}{6}$; -1.066, -2.268

C) $\frac{-5 \pm \sqrt{13}}{12}$; -0.116, -0.717 D) $\frac{-5 \pm \sqrt{37}}{6}$; 0.18, -1.847

392) $3x^2 + 10x = -4$ 392) ____

A) $\frac{-10 \pm \sqrt{13}}{3}$; -2.131, -4.535 B) $\frac{-5 \pm \sqrt{13}}{6}$; -0.232, -1.434

C) $\frac{-5 \pm \sqrt{13}}{3}$; -0.465, -2.869 D) $\frac{-5 \pm \sqrt{37}}{3}$; 0.361, -3.694

393) $x^2 - x = -20$ 393) ____

A) -4, -5 B) 4, 5

C) No real number solutions D) 1, 20

Use the discriminant to determine the number of real solutions of the equation.

394) $s^2 + 6s - 7 = 0$ 394) ____

A) 2 B) No real solutions C) 1

395) $t^2 - 10t + 25 = 0$ 395) ____

A) No real solutions B) 2 C) 1

396) $v^2 + 7v - 2 = 0$ 396) ____

A) 2 B) No real solutions C) 1

397) $w^2 - 2w + 7 = 0$ 397) ____

A) 2 B) 1 C) No real solutions

398) $36x^2 - 12x + 1 = 0$ 398) ____

A) 2 B) No real solutions C) 1

399) $2y^2 = -3y - 2$ 399) ____

A) 1 B) 2 C) No real solutions

400) $2 + 5z^2 = -5z$ 400) ____

A) 1 B) 2 C) No real solutions

401) $10 - 5a^2 = -3a + 7$ 401) ____

A) 2 B) No real solutions C) 1

Find approximate solutions of the equation.

402) $(m + 3.15)^2 = 22.09$ 402) ____

A) 1.55 or -7.85 B) 2.93 or -6.47 C) 1.55 D) 4.35 or -4.35

403) $x^2 + 0.2x + 0.01 = 924.16$ 403) ____

A) 924.06 or -924.26 B) 30.3

C) 30.3 or 30.5 D) 30.3 or -30.5

404) $x^2 + 3.1x - 8.4 = 0$ 404) ____

A) 1.74 or -4.84 B) 4.84 or -4.84 C) 4.84 or -1.74 D) 1.74 or -1.74

405) $4x^2 - 9.4x - 9.4 = 0$ 405) ____

A) 3.11 or -0.76 B) 0.76 or -3.11 C) 0.76 or -0.76 D) 3.11 or -3.11

406) $2.81x^2 - 0.6x - 8.7 = 0$ 406) ____

A) 1.66 or -1.66 B) 1.66 or -1.87 C) 1.87 or -1.87 D) 1.87 or -1.66

407) $3.70y^2 - 2.0y - 0.1 = 0$ 407) ____

A) 0.59 or -0.05 B) 0.59 or -0.59 C) 0.05 or -0.05 D) 0.05 or -0.59

408) $5y^2 - 4.9y - 7.2 = 0$ 408) ____

A) 0.81 or -0.81 B) 1.79 or -0.81 C) 0.81 or -1.79 D) 1.79 or -1.79

409) $3x^2 + 6x = -1$ 409) ____

A) -0.36 or -3.64 B) -0.18 or -1.82 C) 0.15 or -2.15 D) 1.82 or 0.18

Solve the problem.

410) Two cars leave an intersection. One car travels north; the other east. When the car traveling north had gone 18 mi, the distance between the cars was 6 mi more than the distance traveled by the car heading east. How far had the eastbound car traveled? 410) ____

A) 36 mi B) 24 mi C) 30 mi D) 18 mi

411) 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. 411) ____

A) 5 in. by 9 in.
B) Not enough information
C) 5 in. by 10 in.
D) 4 in. by 9 in.

412) A rectangular garden has dimensions of 21 feet by 14 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 344 square feet? 412) ____

A) 6.5 ft B) 6 ft C) 5 ft D) 4 ft

413) A picture is to be mounted on a piece of matte board 12 inches by 20 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 420 square inches? 413) ____

A) 7 in. B) 5 in. C) 6 in. D) 7.5 in.

414) 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 9 feet by 17 feet and the area of the rug is 20 square feet, how wide will the border be? 414) ____

A) 5.5 ft B) 4.5 ft C) 6 ft D) 3.5 ft

415) 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 6 meters? 415) ____

A) 2.6 sec B) 2.4 sec C) 5.4 sec D) 7.0 sec

416) 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 6 feet? 416) ____

A) 8.7 sec B) 7.0 sec C) 8.5 sec D) 1.2 sec

417) 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 119 feet? 417) ____

A) 2.7 sec B) 1.9 sec C) 1.7 sec D) 3.6 sec

418) Use the formula $A = P(1 + r)^2$ to find what the rate of interest is if a principal amount of \$5500 grows to \$6415.20 in 2 years, if interest is compounded annually. 418) ____

A) 8% B) 10% C) 6% D) 9%

419) Tony bought some stock for \$594. If each share had cost \$11 less he could have bought 9 more shares for the same \$594. How many shares of stock did he buy? 419) ____

A) 18 shares B) 20 shares C) 15 shares D) 13 shares

Solve the equation for the indicated variable.

420) $A = 6s^2$ for s 420) ____

A) $s = \pm\sqrt{\frac{A}{6}}$ B) $s = 36A^2$ C) $s = \frac{A}{6}$ D) $s = \pm\sqrt{6A}$

421) $A = \pi r^2$ for r 421) ____

A) $r = \pm\sqrt{\frac{A}{\pi}}$ B) $r = \frac{A}{\pi}$ C) $r = \pm\sqrt{\frac{\pi}{A}}$ D) $r = A\pi$

422) $E = mc^2$ for c 422) ____

A) $c = \frac{E}{m}$ B) $c = \pm\sqrt{Em}$ C) $c = \pm\sqrt{\frac{E}{m}}$ D) $c = Em$

423) $4\pi r^2 = A$ for r 423) ____

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) $r = \pm\sqrt{2\pi A}$

424) $v^2 = 2as$ for v 424) ____

A) $v = \frac{2a}{s}$ B) $v = \pm\sqrt{2as}$ C) $v = \pm\sqrt{\frac{2a}{s}}$ D) $v = 2a\sqrt{s}$

425) $A = \frac{1}{3}\pi r^2$ for r 425) ____

A) $r = \pm\sqrt{\frac{A}{3\pi}}$ B) $r = \pm\sqrt{\frac{3A}{\pi}}$ C) $r = 3\sqrt{A\pi}$ D) $r = \frac{3\pi}{A}$

426) $S = \frac{1}{2}gt^2$ for t 426) ____

A) $t = \pm 2\sqrt{gs}$ B) $t = 2gS$ C) $t = \pm\sqrt{\frac{g}{2S}}$ D) $t = \pm\sqrt{\frac{2S}{g}}$

427) $c = \pm\sqrt{\frac{E}{m}}$ for E 427) ____

A) $E = mc^2$ B) $E = \pm\sqrt{\frac{c}{m}}$ C) $E = \pm c\sqrt{m}$ D) $E = mc$

428) $r = \pm\sqrt{\frac{A}{2\pi}}$ for A 428) ____

A) $A = 2\pi r$ B) $A = 2\pi r^2$ C) $A = \pm\sqrt{2\pi r}$ D) $A = \pm 2\pi\sqrt{r}$

429) $x = \pm\sqrt{r^2 - y^2}$ for r 429) ____

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 Key
Testname: UNTITLED1

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

43) B
44) C
45) B
46) B
47) A
48) D
49) C
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82) B
83) A
84) D

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166) B
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328) B
329) C
330) D
331) C
332) B
333) B
334) A
335) B
336) A

337) C
338) A
339) D
340) B
341) B
342) C
343) A
344) D
345) D
346) D
347) B
348) A
349) D
350) C
351) C
352) C
353) D
354) D
355) C
356) A
357) B
358) D
359) C
360) A
361) B
362) B
363) C
364) B
365) A
366) Answers vary but they should find a number such that their product is 14 and their sum is 9.
367) A
368) If x is negative and n is odd, the answer will be negative.
369) $(2x)^0 = 1$, because the exponent is applied to the entire quantity in the parentheses. $(2x^0) = 2$ because the exponent is applied only to the x.
370) B
371) C
372) A
373) B
374) C
375) C
376) D
377) B

378) D
379) A
380) D
381) B
382) C
383) D
384) A
385) D
386) B
387) D
388) D
389) A
390) A
391) A
392) C
393) C
394) A
395) C
396) A
397) C
398) C
399) C
400) C
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402) A
403) D
404) A
405) A
406) D
407) A
408) B
409) B
410) B
411) B
412) D
413) B
414) D
415) A
416) A
417) B
418) A
419) A

420) A
421) A
422) C
423) B
424) B
425) B
426) D
427) A
428) B
429) D