College Algebra 8th edition Blitzer Test Bank

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TEST ITEM FILE

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COLLEGE ALGEBRA

EIGHTH EDITION

COLLEGE ALGEBRA ESSENTIALS

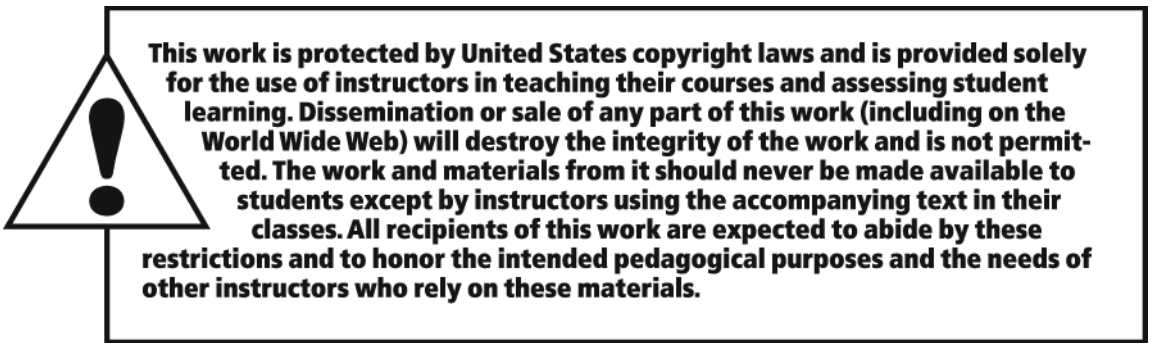
SIXTH EDITION

Robert Blitzer

Miami Dade College

Pearson

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Blitzer *College Algebra* 8e
Chapter 0 Test Item File

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

Evaluate the algebraic expression for the given value or values of the variable(s).

1) $8x + 6$; $x = 5$

A) 14 B) 46 C) 80 D) 34

Objective: (1) Evaluate Algebraic Expressions

2) $5x + 6$; $x = -2$

A) −4 B) −16 C) 16 D) 4

Objective: (1) Evaluate Algebraic Expressions

3) $2(x + 4) + 19$; $x = -11$

A) 5 B) −17 C) 55 D) −5

Objective: (1) Evaluate Algebraic Expressions

4) $3x^2 + 4y$; $x = 9$ and $y = 7$

A) 1,785 B) 271 C) 183 D) 757

Objective: (1) Evaluate Algebraic Expressions

5) $(x + 4y)^2$; $x = 3$ and $y = 3$

A) 15 B) 49 C) 30 D) 225

Objective: (1) Evaluate Algebraic Expressions

6) $6 + 6(x - 7)^3$; $x = 9$

A) 96 B) 54 C) −42 D) 18

Objective: (1) Evaluate Algebraic Expressions

7) $x^2 - 3(x - y)$; $x = 6$ and $y = 4$

A) −42 B) 14 C) 22 D) 30

Objective: (1) Evaluate Algebraic Expressions

8) $\frac{9(x + 5)}{2x + 4}$; $x = 7$

A) 6 B) 12 C) 1 D) $\frac{17}{2}$

Objective: (1) Evaluate Algebraic Expressions

9) $\frac{y - 7x}{2x + xy}$; $x = -3$ and $y = 4$

A) $-\frac{4}{3}$ B) $-\frac{17}{6}$ C) $-\frac{25}{18}$ D) $\frac{17}{18}$

Objective: (1) Evaluate Algebraic Expressions

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Solve.

10) The formula $C = \frac{5}{9}(F - 32)$ expresses the relationship between Fahrenheit temperature, F, and Celsius temperature, C. Use the formula to convert 59°F to its equivalent temperature on the Celsius scale.

A) 51°C B) 15°C C) 3°C D) 49°C

Objective: (2) Use Mathematical Models

11) A stone is dropped from a tower that is 810 feet high. The formula $h = 810 - 16t^2$ describes the stone's height above the ground, h, in feet, t seconds after it was dropped. What is the stone's height 3 seconds after it is released?

A) 676 ft B) 666 ft C) 641 ft D) 691 ft

Objective: (2) Use Mathematical Models

12) If a rock falls from a height of 80 meters above the ground, the height H (in meters) after x seconds can be approximated using the formula $H = 80 - 4.9x^2$. What is the height of the rock after 2 seconds?

A) −16.04 m B) 70.2 m C) 60.4 m D) 300.4 m

Objective: (2) Use Mathematical Models

13) As the relative humidity increases, the temperature seems higher than it is. The formula $T = 0.118x + 59.63$ approximates the apparent temperature for an actual temperature of 65°F, where x is the relative humidity. What is the apparent temperature (to the nearest degree) for a relative humidity of 50%?

A) 60°F B) 66°F C) 110°F D) 352°F

Objective: (2) Use Mathematical Models

14) The winning times (in seconds) in a speed–skating event for men can be represented by the formula $T = 46.96 - 0.096x$, where x represents the year, with $x = 0$ corresponding to 1920. (For example in 1992, x would be $1992 - 1920 = 72$.) According to the formula, what was the winning time in 1999? Round to the nearest hundredth.

A) 39.38 sec B) 41.30 sec C) 40.34 sec D) 3,702.26 sec

Objective: (2) Use Mathematical Models

15) It is estimated that y, the number of items of a particular commodity (in millions) sold in the United States in year x, where x represents the number of years since 1990, is given by the formula $y = 1.29x + 4.37$. That is, $x = 0$ represents 1990, $x = 1$ represents 1991, and so on. According to the formula, how many items sold in 1999?

A) 4.37 millions B) 50.94 millions C) 17.27 millions D) 15.98 millions

Objective: (2) Use Mathematical Models

Find the intersection of the two sets.

16) $\{2, 7, 5, 8\} \cap \{5, 6, 2\}$

A) {2} B) {2, 5} C) {2, 5, 8, 7, 6} D) ∅

Objective: (3) Find the Intersection of Two Sets

17) $\{2, 7, 8\} \cap \{5, 11\}$

A) {2, 8} B) {7, 8} C) ∅ D) {2, 5, 8, 7, 11}

Objective: (3) Find the Intersection of Two Sets

18) $\{4, 6, 7, 9\} \cap \varnothing$

A) {4, 6, 7, 9} B) {7, 9} C) ∅ D) {4, 6}

Objective: (3) Find the Intersection of Two Sets

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Find the union of the two sets.

19) $\{1, 4, 9, 11\} \cup \{1, 4, 12\}$

A) $\{1, 4\}$ B) $\{1, 4, 9, 11, 12\}$ C) $\varnothing$ D) $\{9, 11, 12\}$

Objective: (4) Find the Union of Two Sets

20) $\{2, 10\} \cup \{2, 5, 9\}$

A) $\{5, 9, 10\}$ B) $\varnothing$ C) $\{2\}$ D) $\{2, 5, 9, 10\}$

Objective: (4) Find the Union of Two Sets

21) $\{1, 3, 4, 6\} \cup \varnothing$

A) $\{1, 3\}$ B) $\varnothing$ C) $\{1, 3, 4, 6\}$ D) $\{4, 6\}$

Objective: (4) Find the Union of Two Sets

List all numbers from the given set B that are members of the given Real Number subset.

22) $B = \{11, \sqrt{6}, -21, 0, 0.\overline{6}, \sqrt{4}\}$ Integers

A) 11, 0 B) 11, −21, 0, $\sqrt{4}$ C) 11, −21, 0 D) 11, 0, $\sqrt{4}$

Objective: (5) Recognize Subsets of the Real Numbers

23) $B = \{14, \sqrt{5}, -16, 0, 0.\overline{2}, \sqrt{25}\}$ Whole numbers

A) 14, −16, 0 B) 14, −16, 0, $\sqrt{25}$ C) 14, 0 D) 14, 0, $\sqrt{25}$

Objective: (5) Recognize Subsets of the Real Numbers

24) $B = \{13, \sqrt{8}, -20, 0, 0.\overline{4}, \sqrt{25}\}$ Natural numbers

A) 13, $\sqrt{25}$ B) 13, 0 C) 13, 0, $\sqrt{25}$ D) 13

Objective: (5) Recognize Subsets of the Real Numbers

25) $B = \{10, \sqrt{6}, -8, 0, \frac{4}{5}, \sqrt{25}, 0.\overline{9}, 0.86\}$ Rational numbers

A) 10, 0, $\sqrt{25}$ B) $\sqrt{6}$, $\sqrt{25}$

C) 10, −8, 0, $\frac{4}{5}$, $\sqrt{25}$, 0.86, $0.\overline{9}$ D) $\sqrt{6}$, $\frac{4}{5}$, 0.86

Objective: (5) Recognize Subsets of the Real Numbers

26) $B = \{6, \sqrt{6}, -12, 0, \frac{2}{3}, \sqrt{16}, 0.\overline{5}, 0.34\}$ Irrational numbers

A) $\sqrt{6}$, $\sqrt{16}$, $0.\overline{5}$ B) $\sqrt{6}$, $\sqrt{16}$, 0.34 C) $\sqrt{6}$, $0.\overline{5}$ D) $\sqrt{6}$

Objective: (5) Recognize Subsets of the Real Numbers

27) $B = \{19, \sqrt{7}, 0, \frac{6}{7}, \sqrt{4}, -0.\overline{5}, 0.94, -5\}$ Real numbers

A) 19, $\sqrt{7}$, 0, $\frac{6}{7}$, $\sqrt{4}$, 0.94 B) 19, $\sqrt{7}$, $\frac{6}{7}$, $\sqrt{4}$, $-0.\overline{5}$, 0.94, −5

C) 19, $\sqrt{7}$, 0, $\frac{6}{7}$, $\sqrt{4}$, $-0.\overline{5}$, 0.94, −5 D) 19, 0, $\frac{6}{7}$, $-0.\overline{5}$, 0.94, −5

Objective: (5) Recognize Subsets of the Real Numbers

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Determine whether the statement is true or false.

28) $6 > 13$

A) True B) False

Objective: (6) Use Inequality Symbols

29) $15 \geq 5$

A) True B) False

Objective: (6) Use Inequality Symbols

30) $-29 < 0$

A) True B) False

Objective: (6) Use Inequality Symbols

31) $23 < -9$

A) True B) False

Objective: (6) Use Inequality Symbols

32) $21 \leq 5$

A) True B) False

Objective: (6) Use Inequality Symbols

33) $-4 \leq 22$

A) False B) True

Objective: (6) Use Inequality Symbols

34) $19 > 14$

A) True B) False

Objective: (6) Use Inequality Symbols

35) $-5 \geq 15$

A) False B) True

Objective: (6) Use Inequality Symbols

36) $-\pi \geq -\pi$

A) True B) False

Objective: (6) Use Inequality Symbols

37) $\pi < 3$

A) False B) True

Objective: (6) Use Inequality Symbols

Rewrite the expression without absolute value bars.

38) $|22|$

A) 0 B) −22 C) 22 D) 44

Objective: (7) Evaluate Absolute Value

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39) $|-2|$

A) 4 B) 2 C) 0 D) –2

Objective: (7) Evaluate Absolute Value

40) $\frac{18}{|1|}$

A) 1 B) 18 C) –18 D) –1

Objective: (7) Evaluate Absolute Value

41) $\left|\sqrt{10} - 18\right|$

A) $\sqrt{10} - 18$ B) $18 - \sqrt{10}$ C) –8 D) 8

Objective: (7) Evaluate Absolute Value

42) $|7 + (-12)|$

A) 5 B) –5 C) 19 D) –19

Objective: (7) Evaluate Absolute Value

43) $||-7| - |-9||$

A) –16 B) –2 C) 16 D) 2

Objective: (7) Evaluate Absolute Value

44) $||-1| + |-2||$

A) 1 B) –1 C) –3 D) 3

Objective: (7) Evaluate Absolute Value

Evaluate the expression for the given values of x and y.

45) $\frac{|x|}{x} + \frac{|y|}{y}$; $x = 2$ and $y = -5$

A) –1 B) 0 C) 1 D) 2

Objective: (7) Evaluate Absolute Value

Express the distance between the given numbers using absolute value. Then find the distance by evaluating the absolute value expression.

46) 8 and 76

A) $|8 - 76| = 68$ B) $-|8 + 76| = -84$ C) $-|76 - 8| = -68$ D) $|8 + 76| = 84$

Objective: (8) Use Absolute Value to Express Distance

47) –61 and –81

A) $|(-81) - (-61)| = -20$ B) $|(-81) + (-61)| = -142$

C) $|(-61) - (-81)| = 20$ D) $|-(-61) + (-81)| = 142$

Objective: (8) Use Absolute Value to Express Distance

48) 7 and –100

A) $|(-100) - 7| = -107$ B) $|7 - (-100)| = 107$ C) $|-7 + (-100)| = 93$ D) $|7 + (-100)| = -93$

Objective: (8) Use Absolute Value to Express Distance

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49) 2.4 and 17.7

A) $|2.4 + 17.7| = 20.1$
B) $|-2.4 + 17.7| = -20.1$
C) $|17.7 - 2.4| = -15.3$
D) $|2.4 - 17.7| = 15.3$

Objective: (8) Use Absolute Value to Express Distance

50) –7.3 and 29.4

A) $|29.4 + (-7.3)| = -36.7$
B) $|29.4 - (-7.3)| = 22.1$
C) $|-7.3 + (-29.4)| = -22.1$
D) $|-7.3 - 29.4| = 36.7$

Objective: (8) Use Absolute Value to Express Distance

51) 18.4 and 32.2

A) $|32.2 + 18.4| = 50.6$
B) $|18.4 - 32.2| = 13.8$
C) $-|18.4 + 32.2| = -50.6$
D) $|32.2 - 18.4| = -13.8$

Objective: (8) Use Absolute Value to Express Distance

State the name of the property illustrated.

52) $5 + (-6) = (-6) + 5$

A) Associative property of addition
B) Identity property of addition
C) Distributive property of multiplication over addition
D) Commutative property of addition

Objective: (9) Identify Properties of the Real Numbers

53) $14 \cdot (3 + 1) = 14 \cdot 3 + 14 \cdot 1$

A) Commutative property of multiplication
B) Commutative property of addition
C) Distributive property of multiplication over addition
D) Associative property of multiplication

Objective: (9) Identify Properties of the Real Numbers

54) $23 + (7 + 22) = (23 + 7) + 22$

A) Identity property of addition
B) Distributive property of multiplication over addition
C) Commutative property of addition
D) Associative property of addition

Objective: (9) Identify Properties of the Real Numbers

55) $(9 + 3) + 6 = (3 + 9) + 6$

A) Inverse property of addition
B) Associative property of addition
C) Commutative property of addition
D) Distributive property of multiplication over addition

Objective: (9) Identify Properties of the Real Numbers

56) $3 \cdot (7 \cdot 19) = 3 \cdot (19 \cdot 7)$

A) Identity property of multiplication
B) Associative property of multiplication
C) Distributive property of multiplication over addition
D) Commutative property of multiplication

Objective: (9) Identify Properties of the Real Numbers

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57) $(4 + 6) + (7 + 14) = (7 + 14) + (4 + 6)$

A) Distributive property of multiplication over addition
B) Commutative property of addition
C) Associative property of addition
D) Inverse property of addition

Objective: (9) Identify Properties of the Real Numbers

58) $8 \cdot (12 \cdot 4) = (12 \cdot 4) \cdot 8$

A) Distributive property of multiplication over addition
B) Commutative property of multiplication
C) Identity property of multiplication
D) Associative property of multiplication

Objective: (9) Identify Properties of the Real Numbers

59) $(1 \cdot 14) \cdot 5 = 1 \cdot (14 \cdot 5)$

A) Identity property of multiplication
B) Distributive property of multiplication over addition
C) Associative property of multiplication
D) Commutative property of multiplication

Objective: (9) Identify Properties of the Real Numbers

60) $3(x + 8) = 3x + 3 \cdot 8$

A) Distributive property of multiplication over addition
B) Associative property of multiplication
C) Identity property of multiplication
D) Commutative property of multiplication

Objective: (9) Identify Properties of the Real Numbers

61) $4(-8 + 2) = -32 + 8$

A) Distributive property of multiplication over addition
B) Associative property of addition
C) Commutative property of multiplication
D) Associative property of multiplication

Objective: (9) Identify Properties of the Real Numbers

62) $-7(9 + 6) = -63 + (-42)$

A) Distributive property of multiplication over addition
B) Associative property of addition
C) Associative property of multiplication
D) Commutative property of multiplication

Objective: (9) Identify Properties of the Real Numbers

63) $\frac{1}{(x + 8)}(x + 8) = 1, x \neq -8$

A) Commutative property of multiplication
B) Inverse property of multiplication
C) Identity property of multiplication
D) Inverse property of addition

Objective: (9) Identify Properties of the Real Numbers

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64) $(x + 2) + [-(x + 2)] = 0$

A) Identity property of multiplication
B) Inverse property of multiplication
C) Inverse property of addition
D) Commutative property of addition

Objective: (9) Identify Properties of the Real Numbers

Simplify the algebraic expression.

65) $-9(4r + 8) + 9(9r + 6)$

A) $-5r - 1$ B) $-108r$ C) $45r + 8$ D) $45r - 18$

Objective: (10) Simplify Algebraic Expressions

66) $(9z + 12) - (3z - 5)$

A) $12z + 17$ B) $6z + 17$ C) $6z + 7$ D) $6z - 17$

Objective: (10) Simplify Algebraic Expressions

67) $-3(2x - 9) - 4x + 10$

A) $-10x + 37$ B) $2x + 37$ C) $-10x - 17$ D) $10x + 37$

Objective: (10) Simplify Algebraic Expressions

Write the algebraic expression without parentheses.

68) $-(53y)$

A) $53 - y$ B) $-53y$ C) $-53 - y$ D) $53y$

Objective: (10) Simplify Algebraic Expressions

69) $-5(-5z)$

A) $25 - 5z$ B) $25 + z$ C) $25z$ D) $-25z$

Objective: (10) Simplify Algebraic Expressions

70) $-(9x - 3)$

A) $27x$ B) $-9x + 3$ C) $-9x - 3$ D) $9x - 3$

Objective: (10) Simplify Algebraic Expressions

71) $-(-2 + 3y)$

A) $2 - 3y$ B) $-2 + 3y$ C) $2 + 3y$ D) $6y$

Objective: (10) Simplify Algebraic Expressions

72) $-(5z - 3w + 7y)$

A) $-5z - 3w - 7y$ B) $-5z + 3w - 7y$ C) $-5z - 3w + 7y$ D) $-5z + 3w + 7y$

Objective: (10) Simplify Algebraic Expressions

73) $\frac{1}{2}(2x) + [(-9x) + (9x)]$

A) 1 B) $19x$ C) x D) $-17x$

Objective: (10) Simplify Algebraic Expressions

Simplify the exponential expression.

74) $6^2 \cdot 6^6$

A) 6^8 B) 36^{12} C) 6^{12} D) 36^8

Objective: (1) Use the Product Rule

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75) $y \cdot y^3$

A) y^3 B) $2y^3$ C) y^4 D) $2y^4$

Objective: (1) Use the Product Rule

76) $x^8 \cdot x^7$

A) x^{56} B) $56x$ C) $15x$ D) x^{15}

Objective: (1) Use the Product Rule

77) $(-8x^5)(8x^9)$

A) $64x^{14}$ B) $64x^{45}$ C) $-64x^{14}$ D) $-64x^{45}$

Objective: (1) Use the Product Rule

78) $(-8x^5y)(-10x^2y^6)$

A) $80x^7y^7$ B) $80x^{10}y^6$ C) $-80x^7y^6$ D) $-18x^7y^6$

Objective: (1) Use the Product Rule

79) $\frac{3^4}{3^3}$

A) $\frac{4}{3}$ B) 54 C) 3 D) $\frac{1}{3}$

Objective: (2) Use the Quotient Rule

80) $\frac{x^{10}}{x^3}$

A) x^3 B) $\frac{1}{x^7}$ C) x^{13} D) x^7

Objective: (2) Use the Quotient Rule

81) $\frac{x^2}{x^6}$

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

Objective: (2) Use the Quotient Rule

82) $\frac{4x^4}{x^2}$

A) $4x^6$ B) $8x$ C) $16x^2$ D) $4x^2$

Objective: (2) Use the Quotient Rule

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83) $\frac{12x^{11}}{6x^3}$

A) x^7 B) $2x^8$ C) x^8 D) $2x^7$

Objective: (2) Use the Quotient Rule

84) $\frac{x^{13}y^{12}}{x^5y^4}$

A) xy^8 B) x^7y^8 C) x^8y^8 D) x^7y^7

Objective: (2) Use the Quotient Rule

85) $\frac{36x^{11}y^{13}}{9x^3y^9}$

A) $4x^7y^3$ B) $4x^7y^8$ C) $4x^8y^4$ D) x^8y^4

Objective: (2) Use the Quotient Rule

86) $\frac{56x^3}{7x^{12}}$

A) $8x^9$ B) $\frac{8}{x^9}$ C) $\frac{8}{x^8}$ D) $8x^8$

Objective: (2) Use the Quotient Rule

87) $\frac{27x^{13}y^{13}z^9}{3x^9y^5z^8}$

A) x^4y^8z B) $9x^4y^8z$ C) $9x^3y^7z$ D) $9x^4y^8$

Objective: (2) Use the Quotient Rule

88) 3^0

A) -1 B) 1 C) 0 D) 3

Objective: (3) Use the Zero-Exponent Rule

89) $(-7)^0$

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

Objective: (3) Use the Zero-Exponent Rule

90) -5^0

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

Objective: (3) Use the Zero-Exponent Rule

91) $x^{10}y^0$

A) $\frac{1}{x^{10}}$ B) x^{10} C) 0 D) 1

Objective: (3) Use the Zero-Exponent Rule

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92) $-2y^0$

A) 1 B) −1 C) −2 D) 0

Objective: (3) Use the Zero-Exponent Rule

93) $(12b)^0$

A) b B) 1 C) 0 D) 12

Objective: (3) Use the Zero-Exponent Rule

94) $\left(\frac{-10x^{10}y^9}{2x^2y^2}\right)^0$

A) 1 B) x^8y^7 C) 0 D) $-5x^8y^7$

Objective: (3) Use the Zero-Exponent Rule

95) 5^{-4}

A) −625 B) $\frac{1}{20}$ C) 625 D) $\frac{1}{625}$

Objective: (4) Use the Negative-Exponent Rule

96) $(-5)^{-2}$

A) −25 B) $-\frac{1}{25}$ C) $\frac{1}{25}$ D) 25

Objective: (4) Use the Negative-Exponent Rule

97) -4^{-3}

A) −64 B) $-\frac{1}{64}$ C) $\frac{1}{12}$ D) 64

Objective: (4) Use the Negative-Exponent Rule

98) $5^{-3} \cdot 5$

A) $\frac{1}{25}$ B) 125 C) 25 D) $\frac{1}{125}$

Objective: (4) Use the Negative-Exponent Rule

99) $2^4 \cdot 2^{-5}$

A) $\frac{1}{2}$ B) 512 C) $-\frac{1}{2}$ D) −2

Objective: (4) Use the Negative-Exponent Rule

100) $x^6 \cdot x^{-3}$

A) $-x^3$ B) x^3 C) $-\frac{1}{x^3}$ D) $\frac{1}{x^3}$

Objective: (4) Use the Negative-Exponent Rule

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101) $x^{-9} \cdot x^5$

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

Objective: (4) Use the Negative-Exponent Rule

102) x^2y^{-3}

A) $y^{15}x^2$ B) $\frac{x^2}{y^{15}}$ C) y^3x^2 D) $\frac{x^2}{y^3}$

Objective: (4) Use the Negative-Exponent Rule

103) $7x^{-8}y^4$

A) $\frac{y^4}{7x^8}$ B) $\frac{7x^8}{y^4}$ C) $\frac{7y^4}{x^8}$ D) $\frac{7}{x^8y^4}$

Objective: (4) Use the Negative-Exponent Rule

104) $\frac{x^{-7}}{x^4}$

A) $\frac{1}{x^{11}}$ B) $\frac{1}{x^3}$ C) $\frac{1}{x^{28}}$ D) x^{11}

Objective: (4) Use the Negative-Exponent Rule

105) $\frac{x^{-3}}{y^{-2}}$

A) $\frac{1}{x^3y^2}$ B) $\frac{x^3}{y^2}$ C) $\frac{y^2}{x^3}$ D) x^3y^2

Objective: (4) Use the Negative-Exponent Rule

106) $\frac{x^7y^{-8}}{z^{-2}}$

A) $\frac{y^8}{x^7z^2}$ B) $\frac{x^7z^8}{y^2}$ C) $\frac{z^2}{x^7y^8}$ D) $\frac{x^7z^2}{y^8}$

Objective: (4) Use the Negative-Exponent Rule

107) $\frac{30x^9y^{12}}{5x^8y^{-8}}$

A) $6xy^{20}$ B) $6x^{17}y^{20}$ C) $6xy^4$ D) $30xy^{20}$

Objective: (4) Use the Negative-Exponent Rule

108) $(2^4)^3$

A) 128 B) 48 C) 24 D) 4,096

Objective: (5) Use the Power Rule

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109) $(3^2)^{-4}$

A) $\frac{1}{6{,}561}$ B) -36 C) -24 D) $\frac{1}{729}$

Objective: (5) Use the Power Rule

110) $(x^6)^6$

A) $6x^{36}$ B) x^{12} C) $6x^6$ D) x^{36}

Objective: (5) Use the Power Rule

111) $(x^{-8})^2$

A) $-8x^{16}$ B) $\frac{1}{x^{16}}$ C) $-8x^2$ D) $-x^{16}$

Objective: (5) Use the Power Rule

112) $(x^8)^{-9}$

A) $-9x^{72}$ B) $-9x^8$ C) $-x^{72}$ D) $\frac{1}{x^{72}}$

Objective: (5) Use the Power Rule

113) $(x^{-7})^{-3}$

A) $\frac{1}{x^{10}}$ B) $-x^{10}$ C) x^{21} D) $\frac{1}{x^{21}}$

Objective: (5) Use the Power Rule

114) $(2x)^6$

A) $64x$ B) $12x$ C) $12x^6$ D) $64x^6$

Objective: (6) Find the Power of a Product

115) $(-5x)^2$

A) $-10x$ B) $25x$ C) $25x^2$ D) $-10x^2$

Objective: (6) Find the Power of a Product

116) $(6x^7)^2$

A) $6x^9$ B) $36x^{14}$ C) $36x^7$ D) $6x^{14}$

Objective: (6) Find the Power of a Product

117) $(x^6y)^3$

A) $x^{18}y$ B) x^9y^4 C) x^9y D) $x^{18}y^3$

Objective: (6) Find the Power of a Product

118) $(-11x^8y^3)^2$

A) $-121x^{16}y^6$ B) $121x^{10}y^5$ C) $121x^{16}y^6$ D) $-11x^{16}y^6$

Objective: (6) Find the Power of a Product

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119) $(5x^6)^{-2}$

A) $\frac{25}{x^{12}}$ B) $25x^{12}$ C) $\frac{1}{25x^{12}}$ D) $\frac{1}{5x^{12}}$

Objective: (6) Find the Power of a Product

120) $(x^{-2}y^3)^{-1}$

A) $\frac{x^2}{y^3}$ B) $\frac{1}{x^2y^3}$ C) $\frac{y^2}{x^{-3}}$ D) $\frac{x^{-3}}{y^2}$

Objective: (6) Find the Power of a Product

121) $(3x^{-5}y^5z^{-1})^{-3}$

A) $\frac{x^{15}z^3}{-9y^{-15}}$ B) $\frac{y^8}{-9x^8z^4}$ C) $\frac{x^{15}z^3}{27y^{15}}$ D) $\frac{y^8}{27x^8z^4}$

Objective: (6) Find the Power of a Product

122) $\left(\frac{x}{7}\right)^3$

A) $\frac{x^3}{7}$ B) $\frac{x^4}{2{,}401}$ C) $\frac{x^3}{343}$ D) $\frac{x}{7}$

Objective: (7) Find the Power of a Quotient

123) $\left(-\frac{4}{y}\right)^2$

A) $\frac{4}{y^2}$ B) $\frac{16}{y}$ C) $-\frac{16}{y^2}$ D) $\frac{16}{y^2}$

Objective: (7) Find the Power of a Quotient

124) $\left(\frac{x^3}{2}\right)^4$

A) $\frac{x^7}{16}$ B) $\frac{x^{12}}{2}$ C) $\frac{x^7}{2}$ D) $\frac{x^{12}}{16}$

Objective: (7) Find the Power of a Quotient

125) $\left(\frac{-3x}{y}\right)^2$

A) $\frac{-6x^2}{y^2}$ B) $\frac{9x^2}{y^2}$ C) $\frac{9x}{y^2}$ D) $\frac{-6x}{y}$

Objective: (7) Find the Power of a Quotient

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126) $\left(\frac{4x^3y^2}{z^3}\right)^3$

A) $\frac{64x^6y^5}{z^6}$ B) $\frac{64x^9y^6}{z^9}$ C) $\frac{4x^9y^6}{z^9}$ D) $\frac{4x^9y^6}{z^6}$

Objective: (7) Find the Power of a Quotient

127) $\left(\frac{-27x^{12}y^8}{9x^{16}y^{-3}}\right)^3$

A) $\frac{-27y^{33}}{x^{12}}$ B) $\frac{27y^{33}}{x^{12}}$ C) $\frac{-27}{x^{12}y^{33}}$ D) $\frac{-27y^{15}}{x^{12}}$

Objective: (7) Find the Power of a Quotient

128) $\left(\frac{x^{-3}}{y^4}\right)^{-1}$

A) $\frac{x^{-4}}{y^3}$ B) x^3y^4 C) $\frac{1}{x^3y^4}$ D) $\frac{y^3}{x^{-4}}$

Objective: (7) Find the Power of a Quotient

129) $\left(\frac{5x^3}{y^2}\right)^{-5}$

A) $\frac{3{,}125x^{15}}{y^{10}}$ B) $\frac{y^2}{3{,}125x^{15}}$ C) $\frac{y^{10}}{3{,}125x^{15}}$ D) $\frac{3{,}125y^{10}}{x^{15}}$

Objective: (7) Find the Power of a Quotient

Simplify the exponential expression. Assume that variables represent nonzero real numbers.

130) $2^3 \cdot 4$

A) 12 B) 32 C) 512 D) 24

Objective: (8) Simplify Exponential Expressions

131) $(-6)^3$

A) −18 B) 216 C) 18 D) −216

Objective: (8) Simplify Exponential Expressions

132) -4^4

A) −256 B) −16 C) 256 D) 16

Objective: (8) Simplify Exponential Expressions

133) $\frac{(2x^3)^3}{x^{15}}$

A) $\frac{8}{x^9}$ B) $\frac{8}{x^{24}}$ C) $\frac{8}{x^6}$ D) $\frac{2}{x^6}$

Objective: (8) Simplify Exponential Expressions

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134) $(-5x^3y^{-4})(2x^{-1}y)$

A) $\frac{-3x^2}{y^3}$ B) $-10x^2y^5$ C) $\frac{-10x^2}{y^3}$ D) $\frac{-10x^4}{y^5}$

Objective: (8) Simplify Exponential Expressions

135) $\frac{4^{-6}x^{-2}y^4}{4^{-3}x^{-5}y^8}$

A) $\frac{64}{x^3y^4}$ B) $\frac{1}{64x^5y^4}$ C) $\frac{3x^3}{y^4}$ D) $\frac{x^3}{64y^4}$

Objective: (8) Simplify Exponential Expressions

136) $\left(\frac{xy^4}{x^6y}\right)^{-2}$

A) $\frac{y^6}{x^{10}}$ B) $\frac{1}{x^8y^9}$ C) $\frac{x^{10}}{y^6}$ D) $\frac{1}{x^{14}y^{10}}$

Objective: (8) Simplify Exponential Expressions

137) $\left(\frac{9x^{-5}y^{-2}z^3}{3xy^{-2}z^{-3}}\right)^{-3}$

A) $\frac{x^{18}y^4}{27z^{18}}$ B) $\frac{x^{18}}{27z^{18}}$ C) $\frac{x^{12}}{27z^{18}}$ D) $\frac{3x^{18}}{z^{18}}$

Objective: (8) Simplify Exponential Expressions

Write the number in decimal notation without the use of exponents.

138) 5×10^4

A) 0.000,5 B) 500,000 C) 0.000,05 D) 50,000

Objective: (9) Use Scientific Notation

139) 2×10^4

A) 200,000 B) 20,000 C) 0.000,2 D) 0.000,02

Objective: (9) Use Scientific Notation

140) 4.00×10^7

A) 400,000,000 B) 280 C) 40,000,000 D) 4,000,000

Objective: (9) Use Scientific Notation

141) 4.35×10^{-4}

A) –435,000 B) 0.0000435 C) 0.00435 D) 0.000435

Objective: (9) Use Scientific Notation

142) 8.207×10^{-6}

A) 0.0000008207 B) –8,207,000 C) 0.000008207 D) 0.00008207

Objective: (9) Use Scientific Notation

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143) -6.04×10^7

A) −604,000,000 B) −6,040,000 C) 60,400,000 D) −60,400,000

Objective: (9) Use Scientific Notation

144) $-2.073{,}5 \times 10^7$

A) −145.145 B) −207,350,000 C) −2,073,500 D) −20,735,000

Objective: (9) Use Scientific Notation

Write the number in scientific notation.

145) 789,080

A) $7.890{,}8 \times 10^{-5}$ B) $7.890{,}8 \times 10^6$ C) $7.890{,}8 \times 10^1$ D) $7.890{,}8 \times 10^5$

Objective: (9) Use Scientific Notation

146) 580,000

A) 5.8×10^{-5} B) 5.8×10^4 C) 5.8×10^{-4} D) 5.8×10^5

Objective: (9) Use Scientific Notation

147) 68,000,000

A) 6.8×10^7 B) 6.8×10^{-7} C) 6.8×10^{-8} D) 6.8×10^8

Objective: (9) Use Scientific Notation

148) 7,968,270

A) $7.968{,}27 \times 10^6$ B) $7.968{,}27 \times 10^{-6}$ C) $7.968{,}27 \times 10^7$ D) $7.968{,}27 \times 10^1$

Objective: (9) Use Scientific Notation

149) 0.000926

A) 9.26×10^{-5} B) 9.26×10^4 C) 9.26×10^{-4} D) 9.26×10^{-3}

Objective: (9) Use Scientific Notation

150) 0.000078318

A) 7.8318×10^4 B) 7.8318×10^{-5} C) 7.8318×10^{-4} D) 7.8318×10^5

Objective: (9) Use Scientific Notation

151) 0.0000000539018

A) 5.39018×10^{-8} B) 5.39018×10^8 C) 5.39018×10^{-9} D) 5.39018×10^{-7}

Objective: (9) Use Scientific Notation

Perform the indicated computation. Write the answer in scientific notation.

152) $(7 \times 10^{-7})(2.6 \times 10^5)$

A) 1.82×10^{-35} B) 182×10^{-2} C) 18.2×10^{-1} D) 1.82×10^{-1}

Objective: (9) Use Scientific Notation

153) $(5 \times 10^4)(1.3 \times 10^9)$

A) 65×10^{13} B) 6.5×10^{13} C) 6.5×10^{14} D) 6.5×10^{36}

Objective: (9) Use Scientific Notation

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154) $\frac{15 \times 10^{-6}}{5 \times 10^{5}}$

A) 3×10^{-11} B) 3×10^{-1} C) 6×10^{-1} D) 6×10^{-11}

Objective: (9) Use Scientific Notation

155) $\frac{19.8 \times 10^{5}}{5 \times 10^{-7}}$

A) 7.92×10^{12} B) 3.96×10^{12} C) 3.96×10^{-2} D) 7.92×10^{-2}

Objective: (9) Use Scientific Notation

156) $\frac{13.44 \times 10^{8}}{2.8 \times 10^{4}}$

A) 9.6×10^{4} B) 4.8×10^{4} C) 4.8×10^{12} D) 9.6×10^{12}

Objective: (9) Use Scientific Notation

157) $\frac{540{,}000{,}000{,}000}{0.000009}$

A) 6×10^{16} B) 45×10^{15} C) 45×10^{16} D) 6×10^{15}

Objective: (9) Use Scientific Notation

158) $\frac{0.00020 \times 0.0002}{0.0005}$

A) 8×10^{5} B) 8×10^{-5} C) 40×10^{-6} D) 40×10^{6}

Objective: (9) Use Scientific Notation

Solve. Express the result in scientific notation. If necessary, round the decimal factor to two decimal places.

159) In a state with a population of 8,000,000 people, the average citizen spends $6,000 on housing each year. What is the total spent on housing for the state?

A) $\$4.8 \times 10^{10}$ B) $\$48 \times 10^{11}$ C) $\$4.8 \times 10^{9}$ D) $\$48 \times 10^{10}$

Objective: (9) Use Scientific Notation

160) Approximately 4×10^{3} employees of a certain company average $30,000 each year in salary. What is the total amount earned by all the employees of this company per year?

A) $\$12 \times 10^{9}$ B) $\$1.2 \times 10^{9}$ C) $\$1.2 \times 10^{8}$ D) $\$12 \times 10^{8}$

Objective: (9) Use Scientific Notation

Evaluate the expression or indicate that the root is not a real number.

161) $\sqrt{64}$

A) $\frac{1}{64}$ B) 8 C) 4,096 D) Not a real number

Objective: (1) Evaluate Square Roots

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162) $-\sqrt{36}$

A) -18 B) -6 C) 6 D) Not a real number

Objective: (1) Evaluate Square Roots

163) $\sqrt{-9}$

A) $\frac{3}{9}$ B) 3 C) 81 D) Not a real number

Objective: (1) Evaluate Square Roots

164) $\sqrt{16+9}$

A) 5 B) 25 C) $\sqrt{7}$ D) 7

Objective: (1) Evaluate Square Roots

165) $\sqrt{25-9}$

A) 7 B) 4 C) 16 D) $\sqrt{7}$

Objective: (1) Evaluate Square Roots

166) $\sqrt{64}+\sqrt{36}$

A) 10 B) 100 C) $\sqrt{28}$ D) 14

Objective: (1) Evaluate Square Roots

167) $\sqrt{(8)^2}$

A) 4,096 B) $\frac{1}{64}$ C) 8 D) Not a real number

Objective: (2) Simplify Expressions of the Form SqRt(a^2)

168) $\sqrt{(-9)^2}$

A) 9 B) -9 C) 81 D) Not a real number

Objective: (2) Simplify Expressions of the Form SqRt(a^2)

Use the product rule to simplify the expression.

169) $\sqrt{20}$

A) 4 B) $2\sqrt{5}$ C) 10 D) $5\sqrt{2}$

Objective: (3) Use the Product Rule to Simplify Square Roots

170) $\sqrt{6}$

A) $3\sqrt{2}$ B) 3 C) $2\sqrt{3}$ D) $\sqrt{6}$

Objective: (3) Use the Product Rule to Simplify Square Roots

171) $\sqrt{12}$

A) $\sqrt{12}$ B) $2\sqrt{3}$ C) 6 D) $4\sqrt{3}$

Objective: (3) Use the Product Rule to Simplify Square Roots

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172) $\sqrt{567x^2}$

A) $9\sqrt{7x}$ B) $567x$ C) $7x^2\sqrt{9}$ D) $9|x|\sqrt{7}$

Objective: (3) Use the Product Rule to Simplify Square Roots

173) $\sqrt{243x^2}$

A) $9\sqrt{3}$ B) $9\sqrt{3x^2}$ C) $9x^2\sqrt{3}$ D) $9|x|\sqrt{3}$

Objective: (3) Use the Product Rule to Simplify Square Roots

174) $\sqrt{4x} \cdot \sqrt{20x}$

A) $4\sqrt{5x^2}$ B) $4\sqrt{5x}$ C) $4x^2\sqrt{5}$ D) $4|x|\sqrt{5}$

Objective: (3) Use the Product Rule to Simplify Square Roots

175) $\sqrt{6x^2} \cdot \sqrt{42x}$

A) $6x^2\sqrt{7x}$ B) $6|x|\sqrt{7x^2}$ C) $6|x|\sqrt{7x}$ D) $6|x|\sqrt{7}$

Objective: (3) Use the Product Rule to Simplify Square Roots

Solve the problem.

176) Racing cyclists use the algebraic expression $4\sqrt{x}$ to determine the maximum speed, in miles per hour, to turn a corner of radius x, in feet, without tipping over. Find the maximum speed at which a cyclist should travel around a corner of radius 38 feet without tipping over. Write the answer in simplified radical form.

A) $\frac{4(6+\sqrt{2})}{x}$ miles per hour B) $24\sqrt{2}$ miles per hour

C) $24+\sqrt{2}$ miles per hour D) $4\sqrt{38}$ miles per hour

Objective: (3) Use the Product Rule to Simplify Square Roots

177) The formula $v = \sqrt{2.5r}$ models the safe maximum speed, v, in miles per hour, at which a car can travel on a curved road with radius of curvature, r, in feet. A highway crew measures the radius of curvature at an exit ramp as 1,000 feet. What is the maximum safe speed?

A) 47 miles per hour B) 55 miles per hour C) 100 miles per hour D) 50 miles per hour

Objective: (3) Use the Product Rule to Simplify Square Roots

178) The formula $v = \sqrt{20L}$ can be used to estimate the speed of a car, v, in miles per hour, based on the length, L, in feet, of its skid marks upon sudden braking on a dry asphalt road. If a car is involved in an accident and its skid marks measure 405 feet, at what estimated speed was the car traveling when it applied its brakes just prior to the accident?

A) 95 miles per hour B) 85 miles per hour C) 90 miles per hour D) 100 miles per hour

Objective: (3) Use the Product Rule to Simplify Square Roots

179) The average height of a boy in the United States, from birth through 60 months, can be modeled by $y = 2.9\sqrt{x} + 20.1$ where y is the average height, in inches, of boys who are x months of age. What would be the expected difference in height between a child 36 months of age and a child 16 months of age?

A) 7.8 inches B) 17.4 inches C) 46 inches D) 5.8 inches

Objective: (3) Use the Product Rule to Simplify Square Roots

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Use the quotient rule to simplify the expression.

180) $\sqrt{\frac{1}{16}}$

A) $\frac{1}{256}$ B) 4 C) 16 D) $\frac{1}{4}$

Objective: (4) Use the Quotient Rule to Simplify Square Roots

181) $\sqrt{\frac{9}{16}}$

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

Objective: (4) Use the Quotient Rule to Simplify Square Roots

182) $\frac{\sqrt{20x^3}}{\sqrt{5x}}$

A) $2|x|$ B) $\frac{2x^2}{\sqrt{5}}$ C) $2|x|\sqrt{5}$ D) $5x^2$

Objective: (4) Use the Quotient Rule to Simplify Square Roots

183) $\frac{\sqrt{120x^4}}{\sqrt{5x}}$

A) $2|x|\sqrt{6x}$ B) $120x^3$ C) $\frac{x^2\sqrt{120}}{5}$ D) $5|x|\sqrt{x}$

Objective: (4) Use the Quotient Rule to Simplify Square Roots

Solve the problem.

184) The time, in seconds, that it takes an object to fall a distance d, in feet, is given by the algebraic expression $\sqrt{\frac{d}{16}}$.

Find how long it will take a ball dropped from the top of a building 66 feet tall to hit the ground. Write the answer in simplified radical form.

A) $\frac{8\sqrt{2}}{4}$ seconds B) $\frac{\sqrt{66}}{4}$ seconds C) $\frac{\sqrt{66}}{16}$ seconds D) $\frac{8+\sqrt{2}}{4}$ seconds

Objective: (4) Use the Quotient Rule to Simplify Square Roots

Add or subtract terms whenever possible.

185) $2\sqrt{5} + 7\sqrt{5}$

A) $9\sqrt{10}$ B) $-5\sqrt{5}$ C) $14\sqrt{10}$ D) $9\sqrt{5}$

Objective: (5) Add and Subtract Square Roots

186) $2\sqrt{2} + 9\sqrt{50}$

A) $43\sqrt{2}$ B) $47\sqrt{2}$ C) $11\sqrt{2}$ D) $-47\sqrt{2}$

Objective: (5) Add and Subtract Square Roots

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187) $8\sqrt{7x} + 3\sqrt{7x}$

A) $11x\sqrt{14}$ B) $11\sqrt{7x}$ C) $5\sqrt{7}$ D) $24\sqrt{14x}$

Objective: (5) Add and Subtract Square Roots

188) $-5\sqrt{3} - 7\sqrt{75}$

A) $40\sqrt{3}$ B) $-40\sqrt{3}$ C) $-30\sqrt{3}$ D) $-12\sqrt{3}$

Objective: (5) Add and Subtract Square Roots

189) $7\sqrt{20} + 6\sqrt{245} + 7\sqrt{180}$

A) $-196\sqrt{5}$ B) $7\sqrt{5}$ C) $98\sqrt{5}$ D) $196\sqrt{5}$

Objective: (5) Add and Subtract Square Roots

190) $\sqrt{25} + \sqrt{243} + \sqrt{121} + \sqrt{108}$

A) $117\sqrt{3} + 16$ B) $15\sqrt{3} + 16$

C) $\sqrt{243} + \sqrt{108} + 16$ D) $15\sqrt{3} + \sqrt{25} + \sqrt{121}$

Objective: (5) Add and Subtract Square Roots

191) $\sqrt{3x} + 7\sqrt{48x} - 3\sqrt{108x}$

A) $4\sqrt{3x}$ B) $11\sqrt{159x}$ C) $11\sqrt{3x}$ D) $4\sqrt{159x}$

Objective: (5) Add and Subtract Square Roots

Rationalize the denominator.

192) $\frac{1}{\sqrt{11}}$

A) $\frac{\sqrt{11}}{11}$ B) $1 + \sqrt{11}$ C) $\sqrt{11}$ D) $\frac{1 + \sqrt{11}}{11}$

Objective: (6) Rationalize Denominators

193) $\frac{19}{\sqrt{19}}$

A) 1 B) $\sqrt{19}$ C) $19\sqrt{19}$ D) 19

Objective: (6) Rationalize Denominators

194) $\frac{\sqrt{25}}{\sqrt{11}}$

A) $\frac{25\sqrt{11}}{11}$ B) $\frac{5\sqrt{11}}{11}$ C) 126 D) $5\sqrt{11}$

Objective: (6) Rationalize Denominators

195) $\frac{\sqrt{49}}{\sqrt{2}}$

A) 11 B) $\frac{7\sqrt{2}}{2}$ C) $7\sqrt{2}$ D) $\frac{49\sqrt{2}}{2}$

Objective: (6) Rationalize Denominators

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196) $\frac{\sqrt{7}}{\sqrt{13}}$

A) $\sqrt{7}$ B) $\frac{\sqrt{91}}{169}$ C) $\sqrt{91}$ D) $\frac{\sqrt{91}}{13}$

Objective: (6) Rationalize Denominators

197) $\frac{3}{7-\sqrt{3}}$

A) $\frac{3}{7}-\frac{3}{\sqrt{3}}$ B) $\frac{21+3\sqrt{3}}{4}$ C) $\frac{21+3\sqrt{3}}{46}$ D) $\frac{21-3\sqrt{3}}{46}$

Objective: (6) Rationalize Denominators

198) $\frac{\sqrt{6}}{\sqrt{13}+2}$

A) $\frac{\sqrt{78}+2\sqrt{6}}{9}$ B) $\frac{3\sqrt{78}+13\sqrt{26}}{6}$ C) $\frac{\sqrt{78}-2\sqrt{6}}{9}$ D) $\frac{\sqrt{78}-2\sqrt{6}}{15}$

Objective: (6) Rationalize Denominators

199) $\frac{5}{9-\sqrt{3}}$

A) $\frac{45+5\sqrt{3}}{6}$ B) $\frac{5}{9}-\frac{5}{\sqrt{3}}$ C) $\frac{45-5\sqrt{3}}{78}$ D) $\frac{45+5\sqrt{3}}{78}$

Objective: (6) Rationalize Denominators

200) $\frac{3}{\sqrt{2}+\sqrt{5}}$

A) $\sqrt{5}+\sqrt{2}$ B) $\sqrt{5}-\sqrt{2}$ C) $\sqrt{3}$ D) $\sqrt{2}-\sqrt{5}$

Objective: (6) Rationalize Denominators

Evaluate the radical expressions or indicate that the root is not a real number.

201) $\sqrt[5]{243}$

A) 3 B) 243 C) –3 D) not a real number

Objective: (7) Evaluate and Perform Operations with Higher Roots

202) $\sqrt[3]{(-3)^3}$

A) 3 B) –3 C) –27 D) not a real number

Objective: (7) Evaluate and Perform Operations with Higher Roots

203) $\sqrt[4]{81}$

A) 81 B) –3 C) 3 D) not a real number

Objective: (7) Evaluate and Perform Operations with Higher Roots

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204) $\sqrt[4]{(-2)^4}$

A) −2 B) 2 C) 16 D) not a real number

Objective: (7) Evaluate and Perform Operations with Higher Roots

Simplify the radical expression.

205) $\sqrt[3]{x^8}$

A) $x^2\sqrt[3]{x}$ B) $x\sqrt[3]{x}$ C) $x\sqrt[3]{x^2}$ D) $x^2\sqrt[3]{x^2}$

Objective: (7) Evaluate and Perform Operations with Higher Roots

206) $\sqrt[3]{15} \cdot \sqrt[3]{9}$

A) $\sqrt[3]{135}$ B) $\sqrt[6]{135}$ C) $3\sqrt[3]{15}$ D) $3\sqrt[3]{5}$

Objective: (7) Evaluate and Perform Operations with Higher Roots

Add or subtract terms whenever possible.

207) $9\sqrt[3]{135} + \sqrt[3]{40}$

A) $29\sqrt[3]{5}$ B) $9\sqrt[3]{175}$ C) $11\sqrt[3]{5}$ D) $10\sqrt[3]{175}$

Objective: (7) Evaluate and Perform Operations with Higher Roots

208) $y\sqrt[3]{56x} - \sqrt[3]{875xy^3}$

A) $2y\sqrt[3]{7x} - 56\sqrt[3]{7xy^3}$ B) $-3y\sqrt[3]{7x}$ C) $y\sqrt[3]{-870xy^3}$ D) $(y + 1)\sqrt[3]{880}$

Objective: (7) Evaluate and Perform Operations with Higher Roots

Evaluate the expression without using a calculator.

209) $16^{1/2}$

A) 4 B) 16 C) 8 D) 2

Objective: (8) Understand and Use Rational Exponents

210) $16^{1/4}$

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

Objective: (8) Understand and Use Rational Exponents

211) $64^{4/3}$

A) 256 B) 1,024 C) 4,096 D) 16,384

Objective: (8) Understand and Use Rational Exponents

212) $36^{-3/2}$

A) −216 B) $\frac{1}{216}$ C) $-\frac{1}{216}$ D) 216

Objective: (8) Understand and Use Rational Exponents

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Simplify using properties of exponents.

213) $(5x^{3/4})(3x^{1/2})$

A) $15x^{5/4}$ B) $15x^{5/3}$ C) $15x^{3/4}$ D) $15x^{1/2}$

Objective: (8) Understand and Use Rational Exponents

214) $\dfrac{14x^{2/3}}{7x^{1/4}}$

A) $2x^{1/12}$ B) $7x^{1/12}$ C) $2x^{5/12}$ D) $2x^{5/3}$

Objective: (8) Understand and Use Rational Exponents

215) $(36x^6y^4)^{1/2}$

A) $36x^3y^2$ B) $6x^3y^2$ C) $1{,}296x^{12}y^4$ D) $3x^3y^2$

Objective: (8) Understand and Use Rational Exponents

Simplify by reducing the index of the radical.

216) $\sqrt[12]{x^9}$

A) $\sqrt[4]{x}$ B) $\sqrt[3]{x^3}$ C) $\sqrt[3]{x}$ D) $\sqrt[4]{x^3}$

Objective: (8) Understand and Use Rational Exponents

217) $\sqrt[6]{125x^3}$

A) $\dfrac{1}{25x}$ B) $\sqrt{5x}$ C) $\sqrt[3]{5x}$ D) $5\sqrt{5x}$

Objective: (8) Understand and Use Rational Exponents

Solve the problem.

218) The algebraic expression $0.07d^{3/2}$ describes the duration of a storm, in hours, whose diameter is d miles. Use a calculator to determine the duration of a storm with a diameter of 8 miles. Round to the nearest hundredth.

A) 0.42 hours B) 0.20 hours C) 1.58 hours D) 22.63 hours

Objective: (8) Understand and Use Rational Exponents

Is the algebraic expression a polynomial? If it is, write the polynomial in standard form.

219) $7x^{-1} - 6 + 2x$

A) Yes; $2x + 7x^{-1} - 6$ B) No

Objective: (1) Understand the Vocabulary of Polynomials

220) $5x + 2 + 4x^2$

A) Yes; $4x^2 + 5x + 2$ B) No

Objective: (1) Understand the Vocabulary of Polynomials

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221) $\frac{2x + 5}{x}$

A) Yes; $\frac{5}{x} + 2$ B) No

Objective: (1) Understand the Vocabulary of Polynomials

222) $x^2 - x^3 + x^4 + 3$

A) Yes; $x^4 - x^3 + x^2 + 3$ B) No

Objective: (1) Understand the Vocabulary of Polynomials

Find the degree of the polynomial.

223) $3x - 9x^8 - 2$

A) degree 8 B) degree 3 C) degree 9 D) degree −9

Objective: (1) Understand the Vocabulary of Polynomials

224) $-2x + 9x^3 - 2x^2 - 22$

A) degree 4 B) degree 9 C) degree 2 D) degree 3

Objective: (1) Understand the Vocabulary of Polynomials

225) $-20x^3 - 6x^2 + 8x + 2x^4 - 4$

A) degree 4 B) degree 3 C) degree 2 D) degree −20

Objective: (1) Understand the Vocabulary of Polynomials

226) $x^5 - 2x^3y^7 + 4xy - 6x + 12$

A) degree 17 B) degree −2 C) degree 5 D) degree 10

Objective: (1) Understand the Vocabulary of Polynomials

Perform the indicated operations. Write the resulting polynomial in standard form.

227) $(7x^6 + 7x^4 + 5x) + (5x^6 + 8x^4 - 9x)$

A) $12x + 15x^6 - 4x^4$ B) $23x^{11}$ C) $12x^6 + 15x^4 - 4x$ D) $10x^6 + 15x^4 - 2x$

Objective: (2) Add and Subtract Polynomials

228) $(8x^4 - 6x^3 + 2x^2 + 3) + (3x^4 - 7x^3 + 5x^2 + 2)$

A) $11x^4 - 13x^3 + 7x^2 + 5$ B) $5x^{18} + 5$

C) $-4x^4 - 4x^3 + 10x^2 - 3$ D) $11x^8 - 13x^6 + 7x^4 + 5$

Objective: (2) Add and Subtract Polynomials

229) $(-2x^5 - 9x^4 + 19) + (5x^5 - 7x^4 + 2)$

A) $8x^9$ B) $3x^5 - 5x^4 - 17$ C) $3x^5 - 16x^4 - 17$ D) $3x^5 - 16x^4 + 21$

Objective: (2) Add and Subtract Polynomials

230) $(-4x^4 - 3x^3 + 3x^2 - 2) + (8x^4 - 5x^3 + 9x^2 - 7)$

A) $12x^4 - 2x^3 + 6x^2 - 5$ B) $4x^4 - 2x^3 + 6x^2 - 5$

C) $12x^4 - 2x^3 + 6x^2 - 9$ D) $4x^4 - 8x^3 + 12x^2 - 9$

Objective: (2) Add and Subtract Polynomials

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231) $(7x^7 - 18x^4 - 12) - (9x^7 + 16x^4 + 2)$

A) $-2x^7 - 9x^4 - 10$ B) $-2x^7 - 34x^4 - 10$ C) $-50x^{11}$ D) $-2x^7 - 34x^4 - 14$

Objective: (2) Add and Subtract Polynomials

232) $(9x^4 + 3x^3 - 4x^2 - 2) - (7x^4 - 8x^3 + 6x^2 + 8)$

A) $2x^4 - 5x^3 + 2x^2 + 6$ B) $16x^4 - 5x^3 + 2x^2 + 6$

C) $16x^4 - 5x^3 + 2x^2 - 10$ D) $2x^4 + 11x^3 - 10x^2 - 10$

Objective: (2) Add and Subtract Polynomials

233) $(7x^5 - 3x^3 - 4) - (9x^5 - 12x^3 - 3)$

A) $-2x^5 + 9x^3 - 1$ B) $-2x^5 + 9x^3 - 7$ C) $6x^8$ D) $-2x^5 + 6x^3 - 7$

Objective: (2) Add and Subtract Polynomials

234) $(3x^2 + 4x + 7) + (2x^2 + 3x + 4) - (5x + 2)$

A) $3x^2 + 2x + 13$ B) $5x^2 + 2x + 13$ C) $3x^2 + 2x + 9$ D) $5x^2 + 2x + 9$

Objective: (2) Add and Subtract Polynomials

Find the product.

235) $(x + 5)(x^2 - 5x + 25)$

A) $x^3 - 10x^2 - 10x + 125$ B) $x^3 + 10x^2 + 10x + 125$

C) $x^3 + 125$ D) $x^3 - 125$

Objective: (3) Multiply Polynomials

236) $(x - 11)(x^2 + 8x - 3)$

A) $x^3 - 3x^2 - 91x + 33$ B) $x^3 + 19x^2 + 91x + 33$ C) $x^3 + 19x^2 + 85x - 33$ D) $x^3 - 3x^2 - 85x - 33$

Objective: (3) Multiply Polynomials

237) $(x + 8)(x^2 + 9x - 4)$

A) $x^3 + 17x^2 + 76x + 32$ B) $x^3 + 17x^2 + 68x - 32$

C) $x^4 + 8x^3 + 9x^2 + 68x - 32$ D) $x^3 + 17x^2 + 76x - 32$

Objective: (3) Multiply Polynomials

238) $(x + 9)(4x^2 + 8x + 7)$

A) $4x^3 + 44x^2 + 79x + 63$ B) $4x^3 + 36x^2 + 72x + 63$

C) $288x^4 + 4x^3 + 504x^2 + 63$ D) $40x^3 + 80x^2 + 70x$

Objective: (3) Multiply Polynomials

239) $(9x - 1)(x^2 - 5x + 1)$

A) $9x^3 - 45x^2 + 9x + 1$ B) $9x^3 - 44x^2 + 4x - 1$

C) $9x^3 - 46x^2 + 14x - 1$ D) $9x^3 + 46x^2 - 14x + 1$

Objective: (3) Multiply Polynomials

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240) $(x - 3)(x + 12)$

A) $x^2 + 9x - 36$ B) $x^2 + 9x + 9$ C) $x^2 - 36x + 9$ D) $x^2 + 8x - 36$

Objective: (4) Use FOIL in Polynomial Multiplication

241) $(3x + 2)(x + 7)$

A) $x^2 + 14x + 23$ B) $3x^2 + 22x + 14$ C) $3x^2 + 23x + 14$ D) $x^2 + 23x + 22$

Objective: (4) Use FOIL in Polynomial Multiplication

242) $(2x - 1)(5x - 3)$

A) $10x^2 - 11x + 3$ B) $10x^2 - 11x - 11$ C) $7x^2 - 11x - 11$ D) $7x^2 - 11x + 3$

Objective: (4) Use FOIL in Polynomial Multiplication

243) $(7x^2 - 1)(3x^2 - 8)$

A) $21x^2 - 59x + 8$ B) $21x^4 - 59x^2 + 8$ C) $10x^4 - 59x^2 + 8$ D) $21x^4 - 59x^2 - 59$

Objective: (4) Use FOIL in Polynomial Multiplication

244) $(7x^3 - 2)(x^2 + 2)$

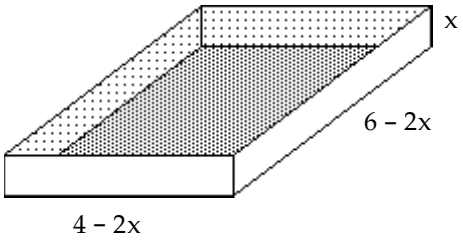
A) $7x^5 + 14x^3 - 2x^2 - 4$ B) $7x^5 + 12x^2 - 4$

C) $7x^5 + 12x^3 - 4$ D) $7x^6 + 14x^3 - 2x^2 - 4$

Objective: (4) Use FOIL in Polynomial Multiplication

Solve the problem.

245) Write a polynomial in standard form that represents the volume of the open box.

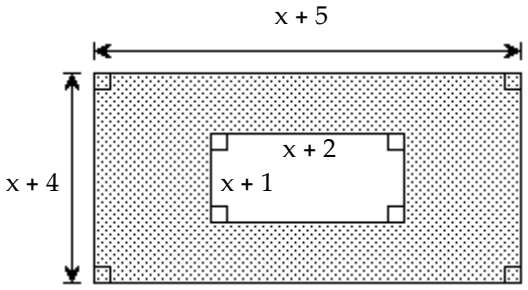


A) $4x^3 - 20x^2 + 24x$ B) $2x^3 - 20x^2 + 24x$ C) $4x^2 - 20x + 24$ D) $4x^3 + 20x^2 + 24x$

Objective: (4) Use FOIL in Polynomial Multiplication

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246) Write a polynomial in standard form that represents the area of the shaded region.



A) $12x + 22$ B) $-6x - 18$ C) $x^2 + 17x + 18$ D) $6x + 18$

Objective: (4) Use FOIL in Polynomial Multiplication

Find the product.

247) $(x + 6)(x - 6)$

A) $x^2 - 12$ B) $x^2 + 12x - 36$ C) $x^2 - 12x - 36$ D) $x^2 - 36$

Objective: (5) Use Special Products in Polynomial Multiplication

248) $(7x + 6)(7x - 6)$

A) $x^2 - 36$ B) $49x^2 + 84x - 36$ C) $49x^2 - 84x - 36$ D) $49x^2 - 36$

Objective: (5) Use Special Products in Polynomial Multiplication

249) $(4 + 7x)(4 - 7x)$

A) $16 - 56x - 49x^2$ B) $16 - 49x^2$ C) $49x^2 - 16$ D) $16 + 56x - 49x^2$

Objective: (5) Use Special Products in Polynomial Multiplication

250) $(4x^2 + 3x)(4x^2 - 3x)$

A) $16x^4 - 9x^2$ B) $16x^4 + 24x^3 - 9x^2$ C) $8x^4 - 6x^2$ D) $16x^4 - 24x^3 - 9x^2$

Objective: (5) Use Special Products in Polynomial Multiplication

251) $(1 + x^3)(1 - x^3)$

A) $2 - x^9$ B) $2 - x^6$ C) $1 - x^9$ D) $1 - x^6$

Objective: (5) Use Special Products in Polynomial Multiplication

252) $(10 - y^5)(10 + y^5)$

A) $100 - y^5$ B) $y^{10} - 100$ C) $100 - y^{10}$ D) $100 - y^{25}$

Objective: (5) Use Special Products in Polynomial Multiplication

253) $(x + 14)^2$

A) $x^2 + 28x + 196$ B) $196x^2 + 28x + 196$ C) $x^2 + 196$ D) $x + 196$

Objective: (5) Use Special Products in Polynomial Multiplication

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254) $(x - 4)^2$

A) $16x^2 - 8x + 16$ B) $x^2 - 8x + 16$ C) $x + 16$ D) $x^2 + 16$

Objective: (5) Use Special Products in Polynomial Multiplication

255) $(4x + 9)^2$

A) $16x^2 + 72x + 81$ B) $4x^2 + 81$ C) $16x^2 + 81$ D) $4x^2 + 72x + 81$

Objective: (5) Use Special Products in Polynomial Multiplication

256) $(5x - 3)^2$

A) $5x^2 - 30x + 9$ B) $5x^2 + 9$ C) $25x^2 - 30x + 9$ D) $25x^2 + 9$

Objective: (5) Use Special Products in Polynomial Multiplication

257) $(6x^2 + 7)^2$

A) $36x^2 + 84x + 49$ B) $36x^4 + 84x^2 + 49$ C) $36x^4 + 49$ D) $6x^4 + 84x^2 + 49$

Objective: (5) Use Special Products in Polynomial Multiplication

258) $(2x^2 - 7)^2$

A) $4x^4 - 28x^2 + 49$ B) $4x^2 - 28x + 49$ C) $4x^4 + 28x^2 + 49$ D) $4x^4 - 28x^2 - 49$

Objective: (5) Use Special Products in Polynomial Multiplication

259) $(7 + 11x)^2$

A) $49 + 154x + 11x^2$ B) $49x^2 + 154x + 121$ C) $49 + 154x + 121x^2$ D) $49 + 121x^2$

Objective: (5) Use Special Products in Polynomial Multiplication

260) $(10 - 9x)^2$

A) $100 - 180x + 81x^2$ B) $100 - 180x - 81x^2$ C) $100x^2 - 180x + 81$ D) $100 + 81x^2$

Objective: (5) Use Special Products in Polynomial Multiplication

261) $(x - 5)^3$

A) $x^3 - 15x^2 + 35x - 125$ B) $x^3 - 15x^2 + 75x - 125$

C) $x^3 - 15x^2 + 15x - 125$ D) $x^3 - 5x^2 + 35x - 125$

Objective: (5) Use Special Products in Polynomial Multiplication

262) $(4x + 5)^3$

A) $16x^2 + 40x + 25$ B) $16x^6 + 20x^3 + 15{,}625$

C) $64x^3 + 240x^2 + 300x + 125$ D) $64x^3 + 240x^2 + 240x + 125$

Objective: (5) Use Special Products in Polynomial Multiplication

263) $(4x - 5)^3$

A) $64x^3 + 240x^2 + 300x + 125$ B) $16x^2 - 40x + 25$

C) $64x^3 - 240x^2 + 300x - 125$ D) $64x^3 - 240x^2 + 240x - 125$

Objective: (5) Use Special Products in Polynomial Multiplication

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Perform the indicated operations.

264) $(-7x^2y - xy) + (5x^2y + 3xy)$

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

Objective: (6) Perform Operations with Polynomials in Several Variables

265) $(6x^2y - 9xy + 8) + (-5x^2y + 4xy - 5)$

A) $-5x^3y^2 + 3$ B) $11x^2y + 13xy + 13$ C) $-x^2y - 13xy + 13$ D) $x^2y - 5xy + 3$

Objective: (6) Perform Operations with Polynomials in Several Variables

266) $(9x^4y^2 - 3x^2y^2 + 5xy) + (10x^4y^2 - 2x^2y^2 + 4xy)$

A) $5x^4y^2 - 19x^2y^2 + 9xy$ B) $-5x^4y^2 + 19x^2y^2 + 9xy$

C) $19x^4y^2 + 5x^2y^2 + 9xy$ D) $19x^4y^2 - 5x^2y^2 + 9xy$

Objective: (6) Perform Operations with Polynomials in Several Variables

267) $(x^3 + 9xy - 6y^2) - (5x^3 + 6xy + y^2)$

A) $4x^3 - 3xy - 5y^2$ B) $-4x^3 + 3xy - 5y^2$ C) $6x^3 + 3xy - 7y^2$ D) $-4x^3 + 3xy - 7y^2$

Objective: (6) Perform Operations with Polynomials in Several Variables

268) $(4x^4 + 9xy - y^3) - (x^4 + 7xy + 9y^3)$

A) $3x^4 + 2xy - 10y^3$ B) $4x^4 + 2xy - 10y^3$ C) $5x^4 + 15xy + 8y^3$ D) $3x^4 + 2xy - 8y^3$

Objective: (6) Perform Operations with Polynomials in Several Variables

269) $(10x^4y^2 + 6x^3y + 7y) - (4x^4y^2 + 12x^3y + 11y + 2x)$

A) $6x^4y^2 - 6x^3y - 4y - 2x$ B) $6x^4y^2 - 6x^3y - 4y + 2x$

C) $14x^4y^2 + 18x^3y + 18y + 2x$ D) $6x^4y^2 + 6x^3y - 4y - 2x$

Objective: (6) Perform Operations with Polynomials in Several Variables

Find the product.

270) $(x + 10y)(x + 10y)$

A) $x^2 + 20xy + 20y^2$ B) $x^2 + 20xy + 100y^2$ C) $x + 20xy + 100y$ D) $x^2 + 17xy + 100y^2$

Objective: (6) Perform Operations with Polynomials in Several Variables

271) $(x - 9y)(3x + 11y)$

A) $3x^2 - 16xy - 99y^2$ B) $x^2 - 16xy - 16y^2$ C) $x^2 - 16xy - 99y^2$ D) $3x^2 - 16xy - 16y^2$

Objective: (6) Perform Operations with Polynomials in Several Variables

272) $(5xy + 6)(2xy + 9)$

A) $10x^2y^2 + 57xy + 57$ B) $7x^2y^2 + 57xy + 54$ C) $7x^2y^2 + 57xy + 57$ D) $10x^2y^2 + 57xy + 54$

Objective: (6) Perform Operations with Polynomials in Several Variables

273) $(9x + 4y)^2$

A) $81x^2 + 16y^2$ B) $81x^2 + 72xy + 16y^2$ C) $9x^2 + 72xy + 16y^2$ D) $9x^2 + 16y^2$

Objective: (6) Perform Operations with Polynomials in Several Variables

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274) $(7x - 9y)^2$

A) $49x^2 + 81y^2$ B) $7x^2 + 81y^2$

C) $49x^2 - 126xy + 81y^2$ D) $7x^2 - 126xy + 81y^2$

Objective: (6) Perform Operations with Polynomials in Several Variables

275) $(a - b)(a^2 + ab + b^2)$

A) $a^3 + 2a^2b + 2ab^2 - b^3$ B) $a^3 + b^3$

C) $a^3 - 2a^2b - 2ab^2 - b^3$ D) $a^3 - b^3$

Objective: (6) Perform Operations with Polynomials in Several Variables

276) $(x^2y^2 + 7)^2$

A) $x^4y^4 + 49$ B) $x^2y^2 + 14xy + 49$ C) $x^4y^4 + 7x^2y^2 + 49$ D) $x^4y^4 + 14x^2y^2 + 49$

Objective: (6) Perform Operations with Polynomials in Several Variables

277) $(4x + 13y)(4x - 13y)$

A) $16x^2 - 169y^2$ B) $16x^2 - 104xy - 169y^2$

C) $4x^2 - 13y^2$ D) $16x^2 + 104xy - 169y^2$

Objective: (6) Perform Operations with Polynomials in Several Variables

278) $(5xy^2 - 12y)(5xy^2 + 12y)$

A) $25x^2y^4 - 120xy^3 - 144y^2$ B) $5x^2y^4 - 12y^2$

C) $25x^2y^4 + 120xy^3 - 144y^2$ D) $25x^2y^4 - 144y^2$

Objective: (6) Perform Operations with Polynomials in Several Variables

Factor out the greatest common factor.

279) $4x + 20$

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

Objective: (1) Factor Out the Greatest Common Factor of a Polynomial

280) $4x^2 - 28x$

A) $4x(x - 7)$ B) $4(x^2 - 7x)$ C) $x(4x - 28)$ D) $4x(x - 7x)$

Objective: (1) Factor Out the Greatest Common Factor of a Polynomial

281) $21x^4 - 9x^3 + 12x^2$

A) $3x(7x^3 - 3x^2 + 4x)$ B) $3x^2(7x^2 - 3x + 4)$ C) $3(7x^4 - 3x^3 + 4x^2)$ D) $x^2(21x^2 - 9x + 12)$

Objective: (1) Factor Out the Greatest Common Factor of a Polynomial

282) $x(x + 3) + 5(x + 3)$

A) $(x + 3)(x + 5)$ B) $5x(x + 3)$ C) $(x^2 + 3x) + (5x + 15)$ D) $3x(x + 5)$

Objective: (1) Factor Out the Greatest Common Factor of a Polynomial

283) $x(5x - 6) + 2(5x - 6)$

A) $(5x - 6)(x - 2)$ B) $(5x - 6)(x + 2)$ C) $2x(5x - 6)$ D) $(5x + 2)(x - 6)$

Objective: (1) Factor Out the Greatest Common Factor of a Polynomial

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284) $x^2(x - 6) - (x - 6)$

A) $(x - 6)(x^2 + 1)$ B) $x^2(x - 6)$ C) $(x - 6)(x^2 - 1)$ D) $(x^3 - 6x^2) - (x - 6)$

Objective: (1) Factor Out the Greatest Common Factor of a Polynomial

Factor by grouping. Assume any variable exponents represent whole numbers.

285) $x^3 - 3x^2 + 2x - 6$

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

Objective: (2) Factor by Grouping

286) $x^3 + 9x + 5x^2 + 45$

A) $(x + 5)(x + 9)$ B) $(x + 5)(x^2 - 9)$ C) $(x - 5)(x^2 + 9)$ D) $(x + 5)(x^2 + 9)$

Objective: (2) Factor by Grouping

287) $3x^3 + 6x^2 + 7x + 14$

A) $(x + 2)(3x^2 - 7)$ B) $(x + 2)(3x^2 + 7)$ C) $(x - 2)(3x^2 + 7)$ D) $(x + 2)(3x + 7)$

Objective: (2) Factor by Grouping

Factor the trinomial, or state that the trinomial is prime.

288) $x^2 + 15x + 54$

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

Objective: (3) Factor Trinomials

289) $x^2 + 11x + 24$

A) $(x - 3)(x + 1)$ B) $(x - 3)(x + 8)$ C) $(x + 3)(x + 8)$ D) prime

Objective: (3) Factor Trinomials

290) $x^2 - 4x - 45$

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

Objective: (3) Factor Trinomials

291) $x^2 + 6x - 40$

A) $(x - 10)(x + 1)$ B) $(x - 10)(x + 4)$ C) $(x + 10)(x - 4)$ D) prime

Objective: (3) Factor Trinomials

292) $x^2 - x - 72$

A) $(x + 1)(x - 17)$ B) $(x + 9)(x - 8)$ C) $(x + 8)(x - 9)$ D) prime

Objective: (3) Factor Trinomials

293) $x^2 - x - 35$

A) $(x - 5)(x + 7)$ B) $(x - 35)(x + 1)$ C) $(x + 5)(x - 7)$ D) prime

Objective: (3) Factor Trinomials

294) $7x^2 + 30x + 8$

A) $(7x + 2)(x + 4)$ B) $(7x + 2)(7x + 4)$ C) $(7x + 4)(x + 2)$ D) prime

Objective: (3) Factor Trinomials

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295) $7x^2 - 31x + 12$

A) $(7x + 4)(x - 3)$ B) $7(x - 3)(x - 4)$ C) $(7x - 3)(x - 4)$ D) $(7x - 3)(7x + 4)$

Objective: (3) Factor Trinomials

296) $3x^2 + 13x - 10$

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

Objective: (3) Factor Trinomials

297) $7x^2 - 16x + 15$

A) $(7x - 3)(x + 5)$ B) $(7x - 5)(x + 3)$ C) $(7x + 5)(x - 3)$ D) prime

Objective: (3) Factor Trinomials

298) $9x^2 + 18x + 8$

A) $(3x - 4)(3x - 2)$ B) $(3x + 4)(3x + 2)$ C) $(9x + 4)(x + 2)$ D) prime

Objective: (3) Factor Trinomials

299) $6x^2 - 13x + 6$

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

Objective: (3) Factor Trinomials

300) $15x^2 + 4x - 4$

A) $(15x + 2)(x - 2)$ B) $(3x - 2)(5x + 2)$ C) $(3x + 2)(5x - 2)$ D) prime

Objective: (3) Factor Trinomials

301) $x^2 - 11xy + 18y^2$

A) $(x + 2y)(x + y)$ B) $(x - 2y)(x - 9y)$ C) $(x + 2y)(x - 9y)$ D) prime

Objective: (3) Factor Trinomials

302) $2x^2 + 3xy + y^2$

A) $(2x + y)(x + 2y)$ B) $(2x + y)(x + y)$ C) $(2x - y)(x - y)$ D) prime

Objective: (3) Factor Trinomials

303) $5x^2 - 42xy - 27y^2$

A) $(5x + 9y)(x - 3y)$ B) $(5x + 3y)(x - 9y)$ C) $y(5x + 3)(x - 9)$ D) prime

Objective: (3) Factor Trinomials

304) $9x^2 + 18xy + 8y^2$

A) $(9x + 2y)(x + 4y)$ B) $(3x + 2y)(3x + 4y)$ C) $(3x - 2y)(3x - 4y)$ D) prime

Objective: (3) Factor Trinomials

Factor the difference of two squares.

305) $x^2 - 36$

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

Objective: (4) Factor the Difference of Squares

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306) $25x^2 - 81$

A) $(5x + 9)^2$ B) $(5x + 9)(5x - 9)$ C) $(5x - 9)^2$ D) prime

Objective: (4) Factor the Difference of Squares

307) $64x^2 - 25y^2$

A) $(8x + 5y)^2$ B) $(8x + 5y)(8x - 5y)$ C) $(8x - 5y)^2$ D) prime

Objective: (4) Factor the Difference of Squares

308) $x^4 - 256$

A) $(x^2 + 16)(x + 4)(x - 4)$ B) $(x^2 - 16)(x^2 - 16)$

C) $(x^2 + 16)(x^2 + 16)$ D) prime

Objective: (4) Factor the Difference of Squares

309) $(16x^4 - 1)$

A) $(4x^2 + 1)(4x^2 + 1)$ B) $(4x^2 + 1)(2x + 1)(2x - 1)$

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

Objective: (4) Factor the Difference of Squares

Factor the perfect square trinomial.

310) $x^2 - 10x + 25$

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

Objective: (5) Factor Perfect Square Trinomials

311) $x^2 - 8x + 64$

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

Objective: (5) Factor Perfect Square Trinomials

312) $36x^2 - 12x + 1$

A) $(6x + 1)(6x - 1)$ B) $(6x - 1)^2$ C) $(x - 6)^2$ D) prime

Objective: (5) Factor Perfect Square Trinomials

Factor using the formula for the sum or difference of two cubes.

313) $x^3 - 27$

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

C) $(x - 3)(x^2 + 3x + 9)$ D) prime

Objective: (6) Factor the Sum or Difference of Two Cubes

314) $x^3 + 27$

A) $(x - 3)(x^2 + 3x + 9)$ B) $(x + 3)(x^2 + 9)$

C) $(x + 3)(x^2 - 3x + 9)$ D) prime

Objective: (6) Factor the Sum or Difference of Two Cubes

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315) $64x^3 - 1$

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

C) $(4x - 1)(16x^2 + 4x + 1)$ D) prime

Objective: (6) Factor the Sum or Difference of Two Cubes

316) $64x^3 + 1$

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

C) $(4x - 1)(16x^2 + 1)$ D) prime

Objective: (6) Factor the Sum or Difference of Two Cubes

317) $64x^3 + 125$

A) $(4x + 5)(16x^2 - 20x + 25)$ B) $(4x + 5)(16x^2 + 25)$

C) $(4x + 5)(16x^2 + 20x + 25)$ D) $(4x - 5)(16x^2 + 20x + 25)$

Objective: (6) Factor the Sum or Difference of Two Cubes

318) $125x^3 - 8$

A) $(5x - 2)(25x^2 + 10x + 4)$ B) $(5x - 2)(25x^2 + 4)$

C) $(5x + 2)(25x^2 - 10x + 4)$ D) $(5x - 2)(25x^2 - 10x + 4)$

Objective: (6) Factor the Sum or Difference of Two Cubes

Factor completely, or state that the polynomial is prime.

319) $10x^3 - 250x$

A) $x(x + 5)(10x - 50)$ B) $10(x + 5)(x^2 - 5x)$ C) $10x(x + 5)(x - 5)$ D) prime

Objective: (7) Use a General Strategy for Factoring Polynomials

320) $98x^2 - 72$

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

Objective: (7) Use a General Strategy for Factoring Polynomials

321) $5x^2 + 65x + 200$

A) $5(x^2 + 13x + 40)$ B) $(5x + 40)(x + 5)$ C) $(x + 8)(5x + 25)$ D) $5(x + 8)(x + 5)$

Objective: (7) Use a General Strategy for Factoring Polynomials

322) $5x^4 - 80$

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

C) $5(x^2 + 4)(x^2 - 4)$ D) prime

Objective: (7) Use a General Strategy for Factoring Polynomials

323) $x^3 - 6x^2 - 4x + 24$

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

Objective: (7) Use a General Strategy for Factoring Polynomials

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324) $3x^2 - 3x - 18$

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

Objective: (7) Use a General Strategy for Factoring Polynomials

325) $x^3 - 36x$

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

Objective: (7) Use a General Strategy for Factoring Polynomials

326) $4x^3 - 4x$

A) $4x(x^2 - 1)$ B) $4x(x + 1)(x - 1)$ C) $x(x + 2)(x - 2)$ D) $4x(x^2 + 1)$

Objective: (7) Use a General Strategy for Factoring Polynomials

327) $x^2 + 16$

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

Objective: (7) Use a General Strategy for Factoring Polynomials

328) $8x^3 - 8$

A) $8(x + 1)(x^2 - x + 1)$ B) $8(x^3 - 1)$ C) $8(x - 1)(x^2 + x + 1)$ D) prime

Objective: (7) Use a General Strategy for Factoring Polynomials

329) $2x^3 + 2{,}000$

A) $2(x + 10)^3$ B) $2(x + 10)(x^2 - 10x + 100)$

C) $2(x^3 + 1{,}000)$ D) prime

Objective: (7) Use a General Strategy for Factoring Polynomials

330) $y^5 - 1y$

A) $y(y^2 - 1)(y^2 - 1)$ B) $y(y^2 + 1)(y^2 + 1)$

C) $y(y^2 + 1)(y + 1)(y - 1)$ D) prime

Objective: (7) Use a General Strategy for Factoring Polynomials

331) $8x^5 - 8x$

A) $8x(x^2 + 1)(x^2 - 1)$ B) $8x(x^4 + 1)(x^2 + 1)(x + 1)(x - 1)$

C) $8x(x^2 + 1)(x + 1)(x - 1)$ D) prime

Objective: (7) Use a General Strategy for Factoring Polynomials

332) $18y^4 - 32y^2$

A) $2(3y^2 + 4)(3y^2 - 4)$ B) $2y^2(3y + 4)(3y - 4)$ C) $2y^2(3y - 4)^2$ D) prime

Objective: (7) Use a General Strategy for Factoring Polynomials

333) $25x^2 - 70x + 49 - 4y^2$

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

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

Objective: (7) Use a General Strategy for Factoring Polynomials

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334) $169b^2x - 16y - 16x + 169b^2y$

A) $(13bx - 4y)^2$ B) $(13b + 4)(13b - 4)(x + y)$

C) $(13bx + 4y)(13bx - 4y)$ D) prime

Objective: (7) Use a General Strategy for Factoring Polynomials

335) $x^2y - 16y + 32 - 2x^2$

A) $(y - 2)(x^2 + 16)$ B) $(y - 2)(x + 4)(x - 4)$ C) $(y + 2)(x + 4)(x - 4)$ D) prime

Objective: (7) Use a General Strategy for Factoring Polynomials

336) $2x^3 - 50a^2x - 16x^2 + 32x$

A) $2x(x - 4 + 5a)(x + 4 - 5a)$ B) $2x(x - 4 + 5a)(x - 4 - 5a)$

C) $2x(x - 4 + 5a)(x + 4 + 5a)$ D) prime

Objective: (7) Use a General Strategy for Factoring Polynomials

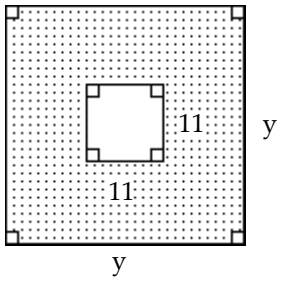
Solve the problem.

337) A department store is having a clearance sale. The price on a television is reduced by 31%. That sale price is then reduced by another 31%. If x is the television's original price, the sale price can be represented by $(x - 0.31x) - 0.31(x - 0.31x)$. With these two reductions, at what percentage of the original price is the television being sold? Use the factored, simplified form of the expression to answer the question.

A) 47.61% B) 69% C) 62% D) 38%

Objective: (7) Use a General Strategy for Factoring Polynomials

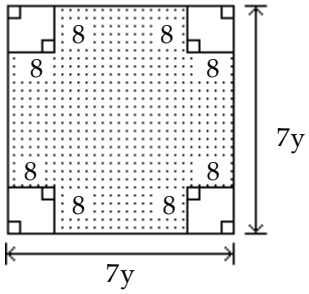
338) Write an expression for the area of the shaded region and express it in factored form.



A) $(y + 11)(y - 11)$ B) $(y - 11)^2$ C) $y^2 + 121$ D) $(y + 11)^2$

Objective: (7) Use a General Strategy for Factoring Polynomials

339) Write an expression for the area of the shaded region and express it in factored form.

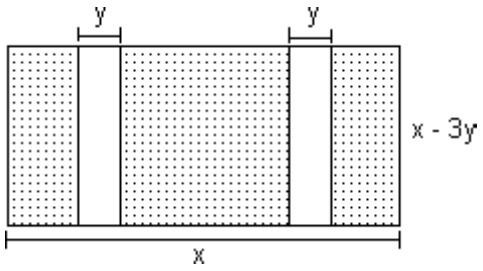


A) $(7y - 8)^2$ B) $(7y + 8)(7y - 8)$ C) $(7y + 16)(7y - 16)$ D) $(7y - 16)^2$

Objective: (7) Use a General Strategy for Factoring Polynomials

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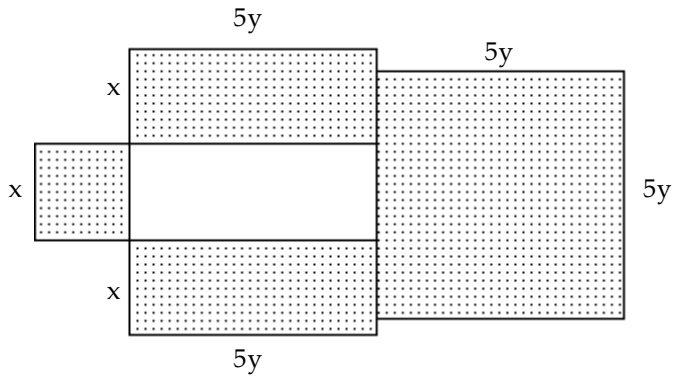
340) Write an expression for the area of the shaded region and express it in factored form.



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

Objective: (7) Use a General Strategy for Factoring Polynomials

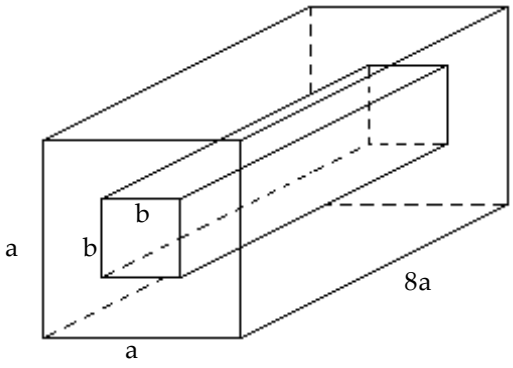
341) Write an expression for the area of the shaded region and express it in factored form.



A) $(x + 5y)^2$ B) $x^2 + 5xy + 25y^2$ C) $5(x + y)^2$ D) $x^2 + 10xy + 25y^2$

Objective: (7) Use a General Strategy for Factoring Polynomials

342) Find the formula for the volume of the region outside the smaller rectangular solid and inside the larger rectangular solid. Express the volume in factored form.



A) $8a(a^2 - b^2)$ B) $8a(a^2 + b^2)$ C) $(8a + b)(8a - b)$ D) $8a(a + b)(a - b)$

Objective: (7) Use a General Strategy for Factoring Polynomials

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Factor and simplify the algebraic expression.

343) $x^{6/7} - x^{1/7}$

A) $x^{1/7}(x^{5/7} - 1)$ B) $x^{1/7}(x^6 - 1)$ C) $x^{6/7}(1 - x^{5/7})$ D) $x(x^{5/7} - 1)$

Objective: (8) Factor Algebraic Expressions Containing Fractional and Negative Exponents

344) $2x^{-4/5} + 20x^{1/5}$

A) $\frac{10 + x}{2x^{1/5}}$ B) $\frac{1 + 10x^{1/5}}{2x^{4/5}}$ C) $\frac{1 + 2x}{10x^{4/5}}$ D) $\frac{2(10x + 1)}{x^{4/5}}$

Objective: (8) Factor Algebraic Expressions Containing Fractional and Negative Exponents

345) $(x + 5)^{1/4} + (x + 5)^{3/4}$

A) $(x + 5)^{1/4}(1 + (x + 5)^{1/2})$ B) $(x + 5)^{1/2}((x + 5)^{1/2} + 1)$

C) $(x + 5)^{1/2}(1 + (x + 5)^{1/4})$ D) $(x + 5)^{1/2}(1 + (x + 5)^{3/2})$

Objective: (8) Factor Algebraic Expressions Containing Fractional and Negative Exponents

346) $(x + 6)^{2/5} - (x + 6)^{12/5}$

A) $(x + 6)((x + 6)^{2/5} - (x + 6)^{12/5})$ B) $(x + 6)^{12/5}((x + 6)^{1/6} - 1)$

C) $(x + 6)^{2/5}(-x^2 - 12x - 35)$ D) $(x + 6)(-x^2 - 12x + 35)$

Objective: (8) Factor Algebraic Expressions Containing Fractional and Negative Exponents

347) $(x + 8)^{-1/5} + (x + 8)^{-6/5}$

A) $\frac{(x + 9)}{(x+ 8)^{1/5}}$ B) $(x + 8)^{-1/5} + (x + 8)^{-6/5}$

C) $\frac{(x + 9)}{(x+ 8)^{6/5}}$ D) $(x + 8)^{6/5}(x + 9)$

Objective: (8) Factor Algebraic Expressions Containing Fractional and Negative Exponents

348) $(x + 8)^{-1/3} - (x + 8)^{-2/3}$

A) $\frac{(x+ 8)^{1/3} - 1}{(x+ 8)^{2/3}}$ B) $(x + 8)^{-1/3} - (x + 8)^{-2/3}$

C) $\frac{x + 7}{(x+ 8)^{2/3}}$ D) $\frac{(x+ 8)^{1/3} - 1}{(x+ 8)^{1/3}}$

Objective: (8) Factor Algebraic Expressions Containing Fractional and Negative Exponents

Find all numbers that must be excluded from the domain of the rational expression.

349) $\frac{6}{x - 4}$

A) $x \neq -4$ B) $x \neq 4$ C) $x \neq 0$ D) $x \neq -6$

Objective: (1) Specify Numbers That Must Be Excluded from the Domain of a Rational Expression

350) $\frac{2}{x + 5}$

A) $x \neq -2$ B) $x \neq 5$ C) $x \neq -5$ D) $x \neq 0$

Objective: (1) Specify Numbers That Must Be Excluded from the Domain of a Rational Expression

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351) $\frac{x+9}{x^2-36}$

A) $x \neq 6, x \neq -6$ B) $x \neq -9$ C) $x \neq 36$ D) $x \neq 6$

Objective: (1) Specify Numbers That Must Be Excluded from the Domain of a Rational Expression

352) $\frac{x-6}{x^2-49}$

A) $x \neq 49$ B) $x \neq 7$ C) $x \neq \frac{6}{49}$ D) $x \neq 7, x \neq -7$

Objective: (1) Specify Numbers That Must Be Excluded from the Domain of a Rational Expression

353) $\frac{x-2}{x^2+9x+14}$

A) $x \neq 2$ B) $x \neq -2, x \neq -7$ C) $x \neq 0$ D) $x \neq 2, x \neq 7$

Objective: (1) Specify Numbers That Must Be Excluded from the Domain of a Rational Expression

354) $\frac{x-9}{x^2+7x-18}$

A) $x \neq 0$ B) $x \neq 9$ C) $x \neq -2, x \neq 9$ D) $x \neq -9, x \neq 2$

Objective: (1) Specify Numbers That Must Be Excluded from the Domain of a Rational Expression

355) $\frac{x+3}{x^2-5x+6}$

A) $x \neq -2, x \neq -3$ B) $x \neq 0$ C) $x \neq -3$ D) $x \neq 2, x \neq 3$

Objective: (1) Specify Numbers That Must Be Excluded from the Domain of a Rational Expression

Simplify the rational expression. Find all numbers that must be excluded from the domain of the simplified rational expression.

356) $\frac{3x+2}{15x^2+22x+8}$

A) $\frac{3x+5}{5x+22}, x \neq -\frac{22}{5}$ B) $\frac{3x+2}{15x^2+22x+8}, x \neq -\frac{4}{5}, x \neq -\frac{2}{3}$

C) $\frac{3x}{5x+4}, x \neq -\frac{4}{5}$ D) $\frac{1}{5x+4}, x \neq -\frac{4}{5}, x \neq -\frac{2}{3}$

Objective: (2) Simplify Rational Expressions

357) $\frac{x^2+12x+36}{x^2+13x+42}$

A) $\frac{12x+36}{13x+42}, x \neq -\frac{42}{13}$ B) $\frac{12x+6}{13x+7}, x \neq -\frac{7}{13}$

C) $-\frac{x^2+12x+36}{x^2+13x+42}, x \neq -7, -6$ D) $\frac{x+6}{x+7}, x \neq -7, -6$

Objective: (2) Simplify Rational Expressions

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358) $\frac{9x^2 - 19x + 2}{x - 2}$

A) $\frac{9x^2 - 19x + 2}{x - 2}$, $x \neq 2$

B) $9x^2 - 20$, no restrictions on x

C) $\frac{1}{x - 2}$, $x \neq 2$

D) $9x - 1$, $x \neq 2$

Objective: (2) Simplify Rational Expressions

Provide an appropriate response.

359) The rational expression $\frac{120x}{100-x}$ describes the cost, in millions of dollars, to inoculate x percent of the current population of cattle against a particular virus. Choose which of the following statements are true with regard to this mathematical model.

I. The expression will be undefined when $x = 100$.
II. The cost of inoculating 90 percent of cattle is 960 million dollars more than the cost of inoculating 50 percent of cattle.
III. This expression will calculate inoculation costs for any population of cattle, no matter what the size.

A) Only I and II are true.
B) Only I and III are true.
C) All three statements are true.
D) Only II and III are true.

Objective: (2) Simplify Rational Expressions

Multiply or divide as indicated.

360) $\frac{5x}{10x + 5} \cdot \frac{14x + 7}{3}$

A) $\frac{7x}{15}$
B) $\frac{7}{3}$
C) $\frac{7x}{3}$
D) $\frac{x}{3}$

Objective: (3) Multiply Rational Expressions

361) $\frac{3x - 3}{x} \cdot \frac{4x^2}{7x - 7}$

A) $\frac{7}{12x}$
B) $\frac{12x^3 - 12x^2}{7x^2 - 7x}$
C) $\frac{12x}{7}$
D) $\frac{21x^2 + 42x + 21}{4x^3}$

Objective: (3) Multiply Rational Expressions

362) $\frac{6x + 9}{3x + 6} \cdot \frac{x + 2}{18x + 27}$

A) $\frac{1}{9}$
B) 9
C) $\frac{1}{3}$
D) $\frac{x + 2}{9(x - 2)}$

Objective: (3) Multiply Rational Expressions

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363) $\frac{x^3 + 1}{x^3 - x^2 + x} \cdot \frac{2x}{-20x - 20}$

A) $-\frac{1}{10}$ B) $-\frac{x^3 + 1}{10(x + 1)}$ C) $\frac{x + 1}{10(-x - 1)}$ D) $-\frac{x^2 + 1}{10}$

Objective: (3) Multiply Rational Expressions

364) $\frac{x^2 - 17x + 72}{x^2 + x - 72} \cdot \frac{x^2 - 64}{x^2 - x - 72}$

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

Objective: (3) Multiply Rational Expressions

365) $\frac{x^2 + 10x + 25}{x^2 + 14x + 45} \cdot \frac{x^2 + 9x}{x^2 + 2x - 15}$

A) $\frac{x}{x^2 + 14x + 45}$ B) $\frac{1}{x - 3}$ C) $\frac{x}{x - 3}$ D) $\frac{x(x + 9)}{x - 3}$

Objective: (3) Multiply Rational Expressions

366) $\frac{x^2 + 6x + 8}{x^2 + 8x + 12} \cdot \frac{x^2 + 6x}{x^2 + 13x + 36}$

A) $\frac{1}{x + 9}$ B) $\frac{x^2 + 6x}{x + 9}$ C) $\frac{x}{x^2 + 8x + 12}$ D) $\frac{x}{x + 9}$

Objective: (3) Multiply Rational Expressions

367) $\frac{x^2 + 11x + 18}{x^2 + 10x + 16} \cdot \frac{x^2 + 15x + 56}{x^2 + 16x + 63}$

A) $\frac{1}{x + 7}$ B) $\frac{x + 8}{x + 7}$ C) 1 D) $\frac{x + 9}{x + 8}$

Objective: (3) Multiply Rational Expressions

368) $\frac{x^2 - 10x + 9}{x^2 - 11x + 28} \cdot \frac{x^2 - 15x + 56}{x^2 - 6x + 5}$

A) $\frac{(x + 9)(x + 8)}{(x + 4)(x + 5)}$ B) $\frac{(x^2 - 10x + 9)(x^2 - 15x + 56)}{(x^2 - 11x + 28)(x^2 - 6x + 5)}$

C) $\frac{(x - 9)}{(x - 5)}$ D) $\frac{(x - 9)(x - 8)}{(x - 4)(x - 5)}$

Objective: (3) Multiply Rational Expressions

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369) $\frac{4x + 20}{6} \div \frac{2x + 10}{10}$

A) $\frac{6x + 30}{16}$ B) $\frac{4x + 20}{12x}$ C) $\frac{10}{3}$ D) $\frac{2}{15}$

Objective: (4) Divide Rational Expressions

370) $\frac{27x - 27}{4} \div \frac{9x - 9}{28}$

A) $\frac{243(x - 1)^2}{112}$ B) $\frac{7(27x - 27)}{9x - 9}$ C) $\frac{1}{21}$ D) 21

Objective: (4) Divide Rational Expressions

371) $\frac{(y - 10)^2}{2} \div \frac{2y - 20}{4}$

A) $\frac{(y - 10)^3}{4}$ B) $\frac{2(y - 10)^2}{2y - 20}$ C) $y - 10$ D) $\frac{1}{y - 10}$

Objective: (4) Divide Rational Expressions

372) $\frac{1}{x + 2} \div \frac{5}{x^2 - 4}$

A) $\frac{5}{x - 2}$ B) $x - 2$ C) $\frac{x - 2}{5}$ D) $\frac{x + 2}{5}$

Objective: (4) Divide Rational Expressions

373) $\frac{(x + 5)^2}{x - 5} \div \frac{x^2 - 25}{5x - 25}$

A) $\frac{(x + 5)^2}{(x - 5)^2}$ B) $\frac{(x + 5)^3}{5(x - 5)}$ C) $\frac{5(x + 5)}{x - 5}$ D) $\frac{10(x^2 + 25)}{x^2 - 25}$

Objective: (4) Divide Rational Expressions

374) $\frac{x^2 - 16x + 64}{4x - 32} \div \frac{10x - 80}{40}$

A) $\frac{x^2 - 16x + 64}{(x - 8)^2}$ B) 40 C) $\frac{(x - 8)^2}{16}$ D) 1

Objective: (4) Divide Rational Expressions

375) $\frac{x^2 + 12x + 27}{x^2 + 16x + 63} \div \frac{x^2 + 3x}{x^2 + 11x + 28}$

A) $\frac{x + 4}{x^2 + 7x}$ B) $\frac{x}{x^2 + 16x + 63}$ C) $\frac{x + 4}{x}$ D) $x + 4$

Objective: (4) Divide Rational Expressions

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376) $\frac{x^2 + 9x + 14}{x^2 + 15x + 56} \div \frac{x^2 + 2x}{x^2 + 4x - 32}$

A) $\frac{x - 4}{x}$ B) $\frac{x - 4}{x^2 + 8x}$ C) $\frac{x}{x^2 + 15x + 56}$ D) $x - 4$

Objective: (4) Divide Rational Expressions

377) $\frac{7x^2 + 20x - 32}{8x - 16} \cdot \frac{x^2 - 2x}{49x^2 - 64} \div \frac{4x + 16}{3x^3}$

A) $\frac{4(x + 4)^2}{24x^2(7x + 8)}$ B) $\frac{3x^3}{32(7x + 8)}$ C) $\frac{32}{3x^4(7x + 8)}$ D) $\frac{3x^4}{32(7x + 8)}$

Objective: (4) Divide Rational Expressions

Add or subtract as indicated.

378) $\frac{6x + 4}{6x + 7} + \frac{6x + 10}{6x + 7}$

A) 1 B) $\frac{7x + 8}{6x + 7}$ C) $\frac{2}{6x + 7}$ D) 2

Objective: (5) Add and Subtract Rational Expressions

379) $\frac{x^2 - 2x}{x^2 + 3x} + \frac{x^2 + x}{x^2 + 3x}$

A) $\frac{2x - 1}{x + 3}$ B) $\frac{-1}{x + 3}$ C) $\frac{x - 1}{x + 3}$ D) $\frac{2x + 1}{x + 3}$

Objective: (5) Add and Subtract Rational Expressions

380) $\frac{x^2 - 9x}{x - 6} + \frac{18}{x - 6}$

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

Objective: (5) Add and Subtract Rational Expressions

381) $\frac{10x - 1}{x^2 + 7x + 10} + \frac{3 - 9x}{x^2 + 7x + 10}$

A) $\frac{x - 2}{x^2 + 7x + 10}$ B) $\frac{1}{x + 2}$ C) $\frac{1}{x + 5}$ D) $\frac{1}{x^2 + 7x + 10}$

Objective: (5) Add and Subtract Rational Expressions

382) $\frac{x^2 + 11}{x^2 - 4x - 32} + \frac{5x - 7}{x^2 - 4x - 32}$

A) $\frac{x + 1}{x^2 - 4x - 32}$ B) $\frac{x + 4}{x - 8}$ C) $\frac{x + 1}{x - 8}$ D) $\frac{(x - 4)(x - 1)}{(x + 4)(x - 8)}$

Objective: (5) Add and Subtract Rational Expressions

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383) $\frac{5x}{x-4} - \frac{20}{x-4}$

A) $5x$ B) 5 C) $\frac{5x-20}{x-8}$ D) $\frac{1}{5}$

Objective: (5) Add and Subtract Rational Expressions

384) $\frac{x-2}{x-3} - \frac{2x-2}{x-3}$

A) $\frac{x-0}{x-3}$ B) $\frac{x+0}{x-3}$ C) $-\frac{x+0}{x-3}$ D) $-\frac{x-0}{x-3}$

Objective: (5) Add and Subtract Rational Expressions

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

A) $\frac{2(x+4)}{(x-4)(x-2)}$ B) $\frac{2}{x-4}$ C) $\frac{2(x-4)}{(x+4)(x-2)}$ D) $\frac{2}{x-2}$

Objective: (5) Add and Subtract Rational Expressions

386) $\frac{8x-5}{x^2-12x+27} - \frac{7x-2}{x^2-12x+27}$

A) $\frac{1}{x-9}$ B) $\frac{x+3}{x^2-12x+27}$ C) $\frac{1}{x^2-12x+27}$ D) $\frac{1}{x-3}$

Objective: (5) Add and Subtract Rational Expressions

387) $\frac{4}{x} + \frac{5}{x-8}$

A) $\frac{9x-32}{x(8-x)}$ B) $\frac{32x-9}{x(8-x)}$ C) $\frac{32x-9}{x(x-8)}$ D) $\frac{9x-32}{x(x-8)}$

Objective: (5) Add and Subtract Rational Expressions

388) $\frac{2}{x+4} - \frac{6}{x-4}$

A) $\frac{-4x+16}{(x+4)(x-4)}$ B) $\frac{-4x+32}{(x+4)(x-4)}$ C) $\frac{-4x-32}{(x+4)(x-4)}$ D) $\frac{-4}{(x+4)(x-4)}$

Objective: (5) Add and Subtract Rational Expressions

389) $\frac{10}{x-9} + \frac{20}{9-x}$

A) $\frac{10}{x-9}$ B) $\frac{30}{x-9}$ C) $-\frac{10}{x-9}$ D) $-\frac{30}{x-9}$

Objective: (5) Add and Subtract Rational Expressions

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390) $\frac{2}{x-12} - \frac{4}{12-x}$

A) $\frac{-2}{x-12}$ B) $\frac{72-6x}{(x-12)(12-x)}$ C) $\frac{6}{12-x}$ D) $\frac{6}{x-12}$

Objective: (5) Add and Subtract Rational Expressions

391) $\frac{4}{x^2-3x+2} + \frac{7}{x^2-1}$

A) $\frac{10x-11}{(x-1)(x+1)(x-2)}$ B) $\frac{11x-10}{(x-1)(x+1)(x-2)}$ C) $\frac{11x-10}{(x-1)(x-2)}$ D) $\frac{56x-10}{(x-1)(x+1)(x-2)}$

Objective: (5) Add and Subtract Rational Expressions

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

A) $\frac{x^2-3x+16}{(x-4)(x+4)(x+1)}$ B) $\frac{x^2-3}{(x-4)(x+4)(x+1)}$ C) $\frac{x^2+3x+16}{(x-4)(x+4)(x+1)}$ D) $\frac{x^2-3x+16}{(x-4)(x+4)}$

Objective: (5) Add and Subtract Rational Expressions

393) $\frac{x+8}{x^2+12x+35} + \frac{3x+1}{x^2+5x-14}$

A) $4x+9$ B) $\frac{4x+9}{2x^2+17x+21}$ C) $\frac{4x^2+22x-11}{(x-7)(x-5)(x+2)}$ D) $\frac{4x^2+22x-11}{(x+7)(x+5)(x-2)}$

Objective: (5) Add and Subtract Rational Expressions

394) $\frac{5x}{x+1} + \frac{6}{x-1} - \frac{10}{x^2-1}$

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

Objective: (5) Add and Subtract Rational Expressions

Solve the problem.

395) Doctors use the rational expression

$$\frac{DA}{A+12}$$

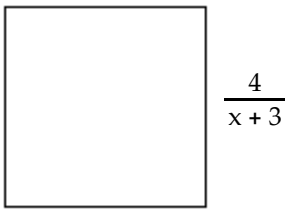
to determine the dosage of a drug prescribed for children. In this expression, A = child's age and D = adult dosage. What is the difference in the child's dosage for a 13–year–old child and a 5–year–old child? Express the answer as a single rational expression in terms of D.

A) $\frac{8}{25}D$ B) $\frac{96}{425}D$ C) $\frac{8}{17}D$ D) $\frac{73}{8}D$

Objective: (5) Add and Subtract Rational Expressions

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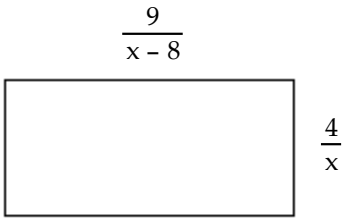
396) Express the perimeter of the square as a single rational expression.



A) $\frac{16}{x+12}$ B) $\frac{16}{x+6}$ C) $\frac{16}{x+3}$ D) $\frac{4}{x+12}$

Objective: (5) Add and Subtract Rational Expressions

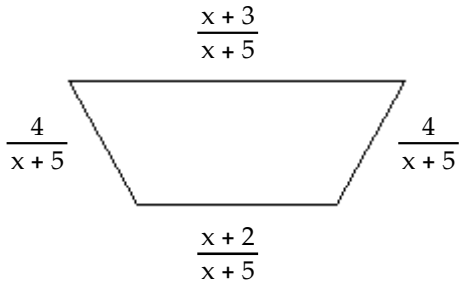
397) Express the perimeter of the rectangle as a single rational expression.



A) $\frac{13x-32}{x(8-x)}$ B) $\frac{26x-64}{x(8-x)}$ C) $\frac{26x-64}{x(x-8)}$ D) $\frac{13x-32}{x(x-8)}$

Objective: (5) Add and Subtract Rational Expressions

398) Express the perimeter of the trapezoid as a single rational expression.



A) $\frac{x+13}{x+5}$ B) $x+8$ C) $\frac{4x+13}{x+5}$ D) $\frac{2x+13}{x+5}$

Objective: (5) Add and Subtract Rational Expressions

Simplify the complex rational expression.

399) $\dfrac{\frac{x}{1}-1}{x-1}$

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

Objective: (6) Simplify Complex Rational Expressions

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400) $\dfrac{1-\dfrac{1}{x}}{1+\dfrac{1}{x}}$

A) $x+1$ B) $\dfrac{x+1}{x-1}$ C) $x-1$ D) $\dfrac{x-1}{x+1}$

Objective: (6) Simplify Complex Rational Expressions

401) $\dfrac{\dfrac{10}{x}+1}{\dfrac{10}{x}-1}$

A) $\dfrac{10+x}{10-x}$ B) 10 C) $\dfrac{x^2}{x^2+10}$ D) x^2+10

Objective: (6) Simplify Complex Rational Expressions

402) $\dfrac{1-\dfrac{1}{x}}{4+\dfrac{1}{x}}$

A) $\dfrac{x-1}{4x+1}$ B) $\dfrac{x+1}{4x-1}$ C) $\dfrac{4x+1}{x-1}$ D) $\dfrac{x-1}{4x}$

Objective: (6) Simplify Complex Rational Expressions

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

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

Objective: (6) Simplify Complex Rational Expressions

404) $\dfrac{x-\dfrac{x}{x-6}}{x-7}$

A) $\dfrac{x}{x+6}$ B) $\dfrac{x^2}{x-6}$ C) $\dfrac{x}{x-6}$ D) $\dfrac{x}{x-7}$

Objective: (6) Simplify Complex Rational Expressions

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405) $\dfrac{\dfrac{x}{x-4}+1}{\dfrac{12}{x^2-16}+1}$

A) $\dfrac{2x+8}{x-2}$ B) $\dfrac{2x-8}{x-2}$ C) $\dfrac{x+4}{x+2}$ D) $\dfrac{2x+8}{x+2}$

Objective: (6) Simplify Complex Rational Expressions

406) $\dfrac{\dfrac{7}{9x-1}-7}{\dfrac{7}{9x-1}+7}$

A) $\dfrac{2+9x}{9x}$ B) $\dfrac{2-x}{x}$ C) $\dfrac{2-9x}{9x}$ D) $\dfrac{9x}{2-9x}$

Objective: (6) Simplify Complex Rational Expressions

407) $\dfrac{\dfrac{1}{x+6}}{\dfrac{5}{x^2-36}}$

A) $x-6$ B) $\dfrac{x-6}{5}$ C) $\dfrac{5}{x-6}$ D) $\dfrac{x+6}{5}$

Objective: (6) Simplify Complex Rational Expressions

408) $\dfrac{\dfrac{49y^2-36x^2}{xy}}{\dfrac{7}{x}-\dfrac{6}{y}}$

A) $\dfrac{xy}{7x+6y}$ B) $6x+7y$ C) $\dfrac{6x+7y}{xy}$ D) $7x+6y$

Objective: (6) Simplify Complex Rational Expressions

409) $\dfrac{\dfrac{2}{x^2-4x-12}-\dfrac{1}{x-6}}{\dfrac{1}{x+2}+1}$

A) $-\dfrac{x}{x^2-3x-18}$ B) -1 C) $-\dfrac{x}{x^2-4x-12}$ D) $\dfrac{x}{x^2-5x-18}$

Objective: (6) Simplify Complex Rational Expressions

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Solve the problem.

410) The average speed on a round-trip commute having a one-way distance d is given by the complex rational expression

$$\frac{2d}{\frac{d}{r_1}+\frac{d}{r_2}},$$

in which r_1 and r_2 are the speeds on the outgoing and return trips, respectively. Fred and Michael both drove to campus averaging 35 miles per hour and each returned home on the same route he used going and averaged 45 miles per hour. Fred's one-way route was 8 miles longer than Michael's. Simplify the complex rational expression and answer the question: How does Fred's overall average speed compare with Michael's?

A) Fred's average speed is higher than Michael's.
B) Fred's average speed is the same as Michael's.
C) Not enough information is given to answer the question.
D) Fred's average speed is lower than Michael's.

Objective: (6) Simplify Complex Rational Expressions

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Answer Key
Testname: BLITZERCA8 CHAPTER 0 TEST ITEM FILE

1) B
2) A
3) A
4) B
5) D
6) B
7) D
8) A
9) C
10) B
11) B
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21) C
22) B
23) D
24) A
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26) D
27) C
28) B
29) A
30) A
31) B
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401) A
402) A
403) B
404) C
405) D
406) C
407) B
408) B
409) A
410) B

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