Precalculus A Right Triangle Approach 5th edition Ratti Test Bank

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Ratti, *Precalculus: A Right Triangle Approach*, 5e
Chapter P Test Item File

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

Write the rational number as a decimal and state whether the decimal is repeating or terminating.

1) $\frac{13}{20}$

A) 0.7 terminating B) 0.55 terminating C) 0.65 terminating D) 0.75 terminating

Objective: (0.1) Write Rational Number as Decimal

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

A) $-7.\overline{7}$ repeating B) - 0.8 terminating C) $-2.\overline{3}$ repeating D) $-0.\overline{7}$ repeating

Objective: (0.1) Write Rational Number as Decimal

3) $\frac{8}{25}$

A) 0.32 terminating B) 0.12 terminating C) 0.24 terminating D) 0.38 terminating

Objective: (0.1) Write Rational Number as Decimal

4) $\frac{8}{15}$

A) $0.5\overline{1}$ repeating B) $0.5\overline{3}$ repeating C) $0.4\overline{3}$ repeating D) $0.5\overline{6}$ repeating

Objective: (0.1) Write Rational Number as Decimal

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

A) - 1.25 terminating B) $-0.\overline{125}$ repeating C) - 0.125 terminating D) - 0.625 terminating

Objective: (0.1) Write Rational Number as Decimal

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

A) $-1.1\overline{6}$ repeating B) - 1.2 terminating C) $-1.\overline{166}$ repeating D) $-1.\overline{16}$ repeating

Objective: (0.1) Write Rational Number as Decimal

7) $\frac{2}{11}$

A) $0.1\overline{8}$ repeating B) $0.\overline{18}$ repeating C) $0.\overline{21}$ repeating D) $0.2\overline{1}$ repeating

Objective: (0.1) Write Rational Number as Decimal

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Answer the question.

8) Consider the numbers $20, \sqrt{8}, -21, 0, \frac{5}{6}, \sqrt{9}, 0.\overline{2}, 0.66$ Which are rational numbers?

A) $20, -21, 0, \frac{5}{6}, \sqrt{9}, 0.66$

B) $20, -21, 0, \frac{5}{6}, 0.\overline{2}, 0.66$

C) $20, -21, 0, \frac{5}{6}, \sqrt{9}, 0.\overline{2}, 0.66$

D) $\sqrt{8}, 0.\overline{2}, 0.66$

Objective: (0.1) Classify Number as Rational or Irrational

9) Consider the numbers $\sqrt{5}, -24, -1, \frac{5}{6}, \sqrt{4}, 0.\overline{8}, 0.01$. Which are irrational numbers?

A) $\sqrt{5}, 0.\overline{8}$ B) $\sqrt{4}$ C) $\sqrt{4}, 0.\overline{8}$ D) $\sqrt{5}$

Objective: (0.1) Classify Number as Rational or Irrational

10) Consider the numbers $-4, -\sqrt{75}, -108, \frac{7}{6}, -\sqrt{9}, 5.\overline{4}$. Which are rational numbers?

A) $-4, -108, \frac{7}{6}, -\sqrt{9}, 5.\overline{4}$

B) $-4, -108, \frac{7}{6},$

C) $-4, -108$

D) $-\sqrt{75}, 5.\overline{4}$

Objective: (0.1) Classify Number as Rational or Irrational

11) Consider the numbers $-5, -\sqrt{77}, 956, \frac{5}{4}, -\sqrt{9}, 5.\overline{7}$. Which are irrational numbers?

A) $-\sqrt{9}, 5.\overline{7}$ B) $956, -5, 5.\overline{7}.$ C) $-\sqrt{77}$ D) $-\sqrt{77}, -\sqrt{9}$

Objective: (0.1) Classify Number as Rational or Irrational

Use an inequality symbol to write the given statement symbolically.

12) 3 is less than 7.

A) $3 \le 7$ B) $3 \ge 7$ C) $3 = 7$ D) $3 < 7$

Objective: (0.1) Use Inequality Symbol to Write Statement Symbolically

13) 3 is greater than - 1.

A) $-1 > 3$ B) $-1 \ge 3$ C) $3 \ge -1$ D) $3 > -1$

Objective: (0.1) Use Inequality Symbol to Write Statement Symbolically

14) $\frac{1}{26}$ is greater than or equal to $\frac{1}{26}$.

A) $\frac{1}{26} = \frac{1}{26}$ B) $\frac{1}{26} > \frac{1}{26}$ C) $\frac{1}{26} \ge \frac{1}{26}$ D) $\frac{1}{26} \le \frac{1}{26}$

Objective: (0.1) Use Inequality Symbol to Write Statement Symbolically

15) x is greater than - 5.

A) $x > -5$ B) $-5 \le x$ C) $x \ge -5$ D) $-5 < x$

Objective: (0.1) Use Inequality Symbol to Write Statement Symbolically

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16) x is less than x + 3.

A) $x = x + 3$ B) $x \leq x + 3$ C) $x > x + 3$ D) $x < x + 3$

Objective: (0.1) Use Inequality Symbol to Write Statement Symbolically

17) 6 is less than or equal to 2x.

A) $6 < 2x$ B) $6 > 2x$ C) $6 = 2x$ D) $6 \leq 2x$

Objective: (0.1) Use Inequality Symbol to Write Statement Symbolically

18) x is positive

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

Objective: (0.1) Use Inequality Symbol to Write Statement Symbolically

19) - x is positive

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

Objective: (0.1) Use Inequality Symbol to Write Statement Symbolically

20) 2x - 1 is greater than or equal to 24.

A) $2x - 1 < 24$ B) $2x - 1 = 24$ C) $2x - 1 \leq 24$ D) $2x - 1 \geq 24$

Objective: (0.1) Use Inequality Symbol to Write Statement Symbolically

21) 2x + 13 is not less than 22.

A) $2x + 13 < 22$ B) $2x + 13 \geq 22$ C) $2x + 13 \leq 22$ D) $2x + 13 > 22$

Objective: (0.1) Use Inequality Symbol to Write Statement Symbolically

Fill in the blank with one of the symbols =, <, or > to produce a true statement.

22) - 16 □0

A) = B) > C) <

Objective: (0.1) Use =, <, or > to Write a True Statement

23) 16 □0

A) < B) > C) =

Objective: (0.1) Use =, <, or > to Write a True Statement

24) 10 □8

A) > B) = C) <

Objective: (0.1) Use =, <, or > to Write a True Statement

25) - 7 □- 3

A) = B) > C) <

Objective: (0.1) Use =, <, or > to Write a True Statement

26) - 1 □19

A) = B) < C) >

Objective: (0.1) Use =, <, or > to Write a True Statement

27) - 5 □- 7

A) = B) < C) >

Objective: (0.1) Use =, <, or > to Write a True Statement

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28) $9\frac{2}{3}$ □ $\frac{29}{3}$

A) < B) = C) >

Objective: (0.1) Use =, <, or > to Write a True Statement

29) $-\frac{85}{6}$ □ $-14\frac{1}{6}$

A) < B) > C) =

Objective: (0.1) Use =, <, or > to Write a True Statement

Use the roster method to write the given set of numbers. Interpret "between a and b to include both a and b."

30) The first five natural numbers

A) {0, 2, 4, 6, 8} B) {0, 1, 2, 3, 4} C) {0, 1, 2, 3, 4, 5} D) {1, 2, 3, 4, 5}

Objective: (0.1) Use Roster Method to Write Set of Numbers

31) The natural numbers between 3 and 7

A) {3, 7} B) {3, 4, 5, 6, 7} C) {4, 5, 6, 7} D) {0, 1, 2, 3}

Objective: (0.1) Use Roster Method to Write Set of Numbers

32) The negative integers between - 2 and 7

A) {- 2, - 1, 0, ..., 7} B) {- 2, - 1} C) {- 1} D) {- 2, - 1, 0}

Objective: (0.1) Use Roster Method to Write Set of Numbers

33) The whole numbers between - 2 and 5

A) {1, 2, 3, 4, 5} B) {0, 1, 2, 3, 4} C) {- 2, ... 0, 1, 2, 3, 4, 5} D) {0, 1, 2, 3, 4, 5}

Objective: (0.1) Use Roster Method to Write Set of Numbers

Find the set if the universal set U = {- 8, - 3, - 1, 0, 2, 4, 5, 6, 7, 9}, A = {- 8, - 3, - 1, 2, 5}, B = {- 3, 2, 5, 7}, and C = {- 1, 4, 9}.

34) $B \cup C$

A) {- 3, - 1, 2, 4, 5, 7, 9} B) ∅ C) { - 3, - 1, 2, 5, 7, 9} D) {0}

Objective: (0.1) Find Union, Intersection, Complement of Given Sets

35) $A \cup C$

A) {- 8, - 3, - 1, 2, 4, 5, 9} B) {- 1}
C) {4, 6, 7, 9} D) {- 3, - 1, 2, 5, 7, 9}

Objective: (0.1) Find Union, Intersection, Complement of Given Sets

36) $A \cap B$

A) {- 8, - 3, - 1, 2, 5, 7} B) {- 3, 2, 5, 7} C) {- 3, 2, 5} D) {- 8, - 3, - 1, 2, 5}

Objective: (0.1) Find Union, Intersection, Complement of Given Sets

37) $A \cap C$

A) {- 3, - 1, 2, 5, 7, 9} B) {- 1}
C) {- 8, - 3, - 1, 2, 4, 5, 7, 9} D) {4, 6, 7, 9}

Objective: (0.1) Find Union, Intersection, Complement of Given Sets

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38) $(A \cap B) \cup C$

A) {- 3, - 1, 2, 4, 5, 9} B) {- 3, - 1, 2, 5} C) {- 3, 2, 5} D) {- 3, - 1, 2}

Objective: (0.1) Find Union, Intersection, Complement of Given Sets

39) $(B \cup C) \cap A$

A) {- 3, - 1, 2, 5} B) {- 3, - 1, 2 } C) {- 3, - 1, 2, 4, 5, 7, 9} D) ∅

Objective: (0.1) Find Union, Intersection, Complement of Given Sets

40) B'

A) {- 8, - 1, 0, 4, 6, 7, 9} B) {- 1, 0, 4, 6, 9} C) {- 8, - 1, 4, 6, 9} D) {- 8, - 1, 0, 4, 6, 9}

Objective: (0.1) Find Union, Intersection, Complement of Given Sets

41) $(A \cup B)'$

A) {- 8, - 1, 4, 6, 9} B) {- 8, - 3, - 1, 2, 5, 7} C) {0, 4, 6, 9} D) {4, 6, 9}

Objective: (0.1) Find Union, Intersection, Complement of Given Sets

42) $(A \cap C)'$

A) {- 8, - 3, 0, 2, 4, 5, 6, 7, 9} B) {- 8, - 3, - 1, 2, 4, 5, 7, 9}
C) {- 1} D) {- 8, - 3, - 1, 2, 4, 5, 6, 7, 9}

Objective: (0.1) Find Union, Intersection, Complement of Given Sets

43) $B' \cap C'$

A) {- 3, - 1, 2, 4, 5, 7, 9} B) {- 8, 6} C) {- 8, 0, 6} D) ∅

Objective: (0.1) Find Union, Intersection, Complement of Given Sets

Simplify the expression.

44) 3^2

A) Exponent: 2, base: 3 B) Exponent: 2, base: 32
C) Exponent: 3, base: 2 D) Exponent: 1, base: 32

Objective: (0.2) Identify Exponent and Base

45) -2^3

A) Exponent: 2, base: 3 B) Exponent: - 3, base: 2
C) Exponent: 3, base: - 2 D) Exponent: 3, base: 2

Objective: (0.2) Identify Exponent and Base

46) -62^4

A) Exponent: - 4, base: 62 B) Exponent: 4, base: - 62
C) Exponent: - 62, base: 4 D) Exponent: 4, base: 62

Objective: (0.2) Identify Exponent and Base

47) 3^0

A) Exponent: 0, base: 3 B) Exponent: 0, base: - 3
C) Exponent: 3, base: 0 D) Exponent: 1, base: 1

Objective: (0.2) Identify Exponent and Base

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48) $(-3)^2$

A) Exponent: 2, base: 6
B) Exponent: 2, base: 3
C) Exponent: - 3, base: 2
D) Exponent: 2, base: - 3

Objective: (0.2) Identify Exponent and Base

49) $(-39)^4$

A) Exponent: 4, base: - 39
B) Exponent: - 39, base: 4
C) Exponent: - 4, base: 39
D) Exponent: 4, base: 39

Objective: (0.2) Identify Exponent and Base

50) $-(-6)^3$

A) Exponent: - 6, base: - 3
B) Exponent: 3, base: - 6
C) Exponent: 3, base: - 18
D) Exponent: 3, base: 6

Objective: (0.2) Identify Exponent and Base

51) $(-6)^0$

A) Exponent: 1, base: - 6
B) Exponent: - 6, base: 0
C) Exponent: 0, base: - 6
D) Exponent: 0, base: 0

Objective: (0.2) Identify Exponent and Base

52) a^4

A) Exponent: a, base: 4
B) Exponent: - 4, base: a
C) Exponent: 4, base: a
D) Exponent: 4, base: - a

Objective: (0.2) Identify Exponent and Base

53) $(-b)^2$

A) Exponent: 2, base: b
B) Exponent: - 2, base: b
C) Exponent: 2, base: - b
D) Exponent: - b, base: 2

Objective: (0.2) Identify Exponent and Base

Evaluate the expression. Write your answer without negative exponents.

54) 4^2

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

Objective: (0.2) Simplify Exponential Expression I

55) -2^3

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

Objective: (0.2) Simplify Exponential Expression I

56) 5^{-3}

A) $\frac{1}{15}$
B) $\frac{1}{125}$
C) - 125
D) 125

Objective: (0.2) Simplify Exponential Expression I

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57) $(-3)^{-4}$

A) $-\frac{1}{81}$ B) 81 C) -81 D) $\frac{1}{81}$

Objective: (0.2) Simplify Exponential Expression I

58) -2^{-4}

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

Objective: (0.2) Simplify Exponential Expression I

59) $(-2)^4$

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

Objective: (0.2) Simplify Exponential Expression I

60) 11^0

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

Objective: (0.2) Simplify Exponential Expression I

61) $10^0 + (-5)^0$

A) 0 B) 2 C) 1 D) 5

Objective: (0.2) Simplify Exponential Expression I

62) $-(11^0) + (-4)^0$

A) 1 B) -2 C) 7 D) 0

Objective: (0.2) Simplify Exponential Expression I

63) $4^{-1} - 2^{-1}$

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

Objective: (0.2) Simplify Exponential Expression I

Simplify the expression. Write your answer without negative exponents. Whenever an exponent is negative or zero, assume that the base is not zero.

64) $(2^{-5}) \cdot (2^2)$

A) $\frac{1}{16}$ B) $\frac{1}{8}$ C) 4 D) 8

Objective: (0.2) Use Product Rule for Exponents

65) $x \cdot x^3$

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

Objective: (0.2) Use Product Rule for Exponents

66) $6^6 \cdot 6^4$

A) 6^{10} B) 36^{10} C) 6^{24} D) 36^{24}

Objective: (0.2) Use Product Rule for Exponents

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67) $x \cdot x^2$

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

Objective: (0.2) Use Product Rule for Exponents

68) $x^9 \cdot x^3$

A) $12x$ B) x^{12} C) $27x$ D) x^{27}

Objective: (0.2) Use Product Rule for Exponents

69) $(4x^5)(2x^2)$

A) $-8x^7$ B) $8x^7$ C) $-8x^{10}$ D) $8x^{10}$

Objective: (0.2) Use Product Rule for Exponents

70) $(-9x^4y)(-2x^2y^6)$

A) $18x^8y^6$ B) $18x^6y^7$ C) $-18x^6y^6$ D) $-11x^6y^6$

Objective: (0.2) Use Product Rule for Exponents

71) $\frac{1}{7^{-3}}$

A) 21 B) 2401 C) 49 D) 343

Objective: (0.2) Use Product Rule for Exponents

72) $\frac{2^2}{2^8}$

A) -252 B) $\frac{1}{64}$ C) $\frac{1}{4}$ D) 64

Objective: (0.2) Use Quotient Rule for Exponents

73) $\frac{x^{12}}{x^4}$

A) x^8 B) $\frac{1}{x^8}$ C) x^4 D) x^{16}

Objective: (0.2) Use Quotient Rule for Exponents

74) $\frac{x^4}{x^7}$

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

Objective: (0.2) Use Quotient Rule for Exponents

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75) $\frac{15^{-2}}{5^{-2}}$

A) 9 B) $\frac{1}{9}$ C) $\frac{3}{5}$ D) $\frac{625}{9}$

Objective: (0.2) Use Quotient Rule for Exponents

76) $\frac{8^{-6}}{8^{3}}$

A) $\frac{1}{8^{3}}$ B) 8^{9} C) 8^{3} D) $\frac{1}{8^{9}}$

Objective: (0.2) Use Quotient Rule for Exponents

77) $\frac{8^{-9}}{8^{-5}}$

A) $\frac{1}{8^{14}}$ B) 8^{14} C) 8^{4} D) $\frac{1}{8^{4}}$

Objective: (0.2) Use Quotient Rule for Exponents

78) $\frac{x^{5}}{x^{-8}}$

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

Objective: (0.2) Use Quotient Rule for Exponents

79) $\frac{20x^{-6}y^{9}}{10x^{7}}$

A) $\frac{y^{9}}{2x^{13}}$ B) $\frac{2x^{9}}{y^{13}}$ C) $\frac{2y^{9}}{x^{13}}$ D) $\frac{y^{9}}{x^{13}}$

Objective: (0.2) Use Quotient Rule for Exponents

80) $\frac{6a^{-5}b^{5}}{30a^{-13}b^{8}}$

A) $\frac{a^{8}}{5b^{3}}$ B) $-\frac{a^{7}}{5b^{4}}$ C) $\frac{b^{4}}{5a^{8}}$ D) $\frac{5a^{8}}{b^{3}}$

Objective: (0.2) Use Quotient Rule for Exponents

81) $\frac{12x^{2}y^{-5}}{-3x^{5}y^{-8}}$

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

Objective: (0.2) Use Quotient Rule for Exponents

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82) $(2^4)^2$

A) 16 B) 32 C) 256 D) 64

Objective: (0.2) Use Power Rules for Exponents I

83) $(3^{-1})^{-3}$

A) 27 B) 9 C) $\frac{1}{9}$ D) $\frac{1}{27}$

Objective: (0.2) Use Power Rules for Exponents I

84) $(x^2)^3$

A) x^6 B) $3x^6$ C) x^5 D) $3x^2$

Objective: (0.2) Use Power Rules for Exponents I

85) $(x^{-7})^5$

A) $-7x^5$ B) $-7x^{35}$ C) $\frac{1}{x^{35}}$ D) $-x^{35}$

Objective: (0.2) Use Power Rules for Exponents I

86) $(x^4)^{-3}$

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

Objective: (0.2) Use Power Rules for Exponents I

87) $(x^{-3})^{-3}$

A) $\frac{1}{x^9}$ B) $\frac{1}{x^6}$ C) $-x^6$ D) x^9

Objective: (0.2) Use Power Rules for Exponents I

88) $\left(\frac{2}{3}\right)^{-4}$

A) $\frac{81}{16}$ B) $-\frac{16}{81}$ C) $-\frac{81}{16}$ D) $\frac{16}{81}$

Objective: (0.2) Use Power Rules for Exponents I

89) $\left(\frac{7}{6}\right)^4$

A) $\frac{343}{216}$ B) $\frac{2401}{1296}$ C) $\frac{2401}{6}$ D) $\frac{16,807}{7776}$

Objective: (0.2) Use Power Rules for Exponents I

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90) $\left(-\frac{1}{2}\right)^4$

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

Objective: (0.2) Use Power Rules for Exponents I

91) $\left(-\frac{1}{5}\right)^{-4}$

A) -125 B) 125 C) 625 D) -625

Objective: (0.2) Use Power Rules for Exponents I

92) $(6x^8)^2$

A) $36x^{16}$ B) $6x^{10}$ C) $6x^{16}$ D) $36x^8$

Objective: (0.2) Use Power Rules for Exponents II

93) $(x^5y)^4$

A) x^9y^5 B) x^9y C) $x^{20}y^4$ D) $x^{20}y$

Objective: (0.2) Use Power Rules for Exponents II

94) $(8x^3)^{-3}$

A) $\frac{1}{512x^9}$ B) $512x^9$ C) $\frac{8}{x^9}$ D) $-24x^3$

Objective: (0.2) Use Power Rules for Exponents II

95) $(x^{-5}y^6)^{-2}$

A) $\frac{1}{x^{10}y^{12}}$ B) $\frac{x^{-7}}{y^4}$ C) $\frac{x^{10}}{y^{12}}$ D) $\frac{y^4}{x^{-7}}$

Objective: (0.2) Use Power Rules for Exponents II

96) $(4x^7y^{-4})^{-3}$

A) $\frac{y^{12}}{64x^{21}}$ B) $4x^7y^{12}$ C) $\frac{1}{64x^{21}y^{12}}$ D) $\frac{-12y^{12}}{x^{21}}$

Objective: (0.2) Use Power Rules for Exponents II

97) $(-4x^{-4}y^{-2})^{-2}$

A) $\frac{1}{16x^6y^4}$ B) $-4x^8y^4$ C) $\frac{x^8y^4}{16}$ D) $-\frac{x^8y^4}{16}$

Objective: (0.2) Use Power Rules for Exponents II

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

A) $\frac{4x^3}{y^9}$ B) $\frac{4y^9}{x^3}$ C) $\frac{y^9}{64x^3}$ D) $-\frac{64x^3}{y^9}$

Objective: (0.2) Use Power Rules for Exponents II

99) $\left(\frac{-5x}{y^4}\right)^{-3}$

A) $-\frac{5y^{12}}{x^3}$ B) $\frac{y^{12}}{125x^3}$ C) $\frac{5y^{12}}{x^3}$ D) $-\frac{y^{12}}{125x^3}$

Objective: (0.2) Use Power Rules for Exponents II

100) $\left(\frac{2x^3y^{-3}}{x^{-2}y^4}\right)^{-5}$

A) $\frac{y^{35}}{2x^5}$ B) $\frac{y^{35}}{32x^{25}}$ C) $\frac{2x^{25}}{y^{35}}$ D) $\frac{y^{35}}{2x^{25}}$

Objective: (0.2) Use Power Rules for Exponents II

101) $\left(\frac{tz^{-3}}{t^{-2}z}\right)^{-3}$

A) $\frac{t^9}{z^6}$ B) $\frac{z^{12}}{t^9}$ C) $\frac{t^{12}}{z^9}$ D) $\frac{z^9}{t^6}$

Objective: (0.2) Use Power Rules for Exponents II

Use the rules of exponents to simplify the expression. Use positive exponents to write the answer.

102) $\frac{4a^3}{(xy)^{-1}}$

A) $\frac{4xy}{a^3}$ B) $4a^3xy$ C) $\frac{a^3xy}{4}$ D) $\frac{4a^3}{xy}$

Objective: (0.2) Simplify Exponential Expression II

103) $\frac{2^{-3}}{2t^{-6}}$

A) $16t^6$ B) $\frac{t^6}{16}$ C) $\frac{t^6}{8}$ D) $\frac{1}{16t^6}$

Objective: (0.2) Simplify Exponential Expression II

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104) $\frac{8a^{-2}b^5}{2a^{-2}b^3}$

A) $6b^2$ B) $\frac{4b^2}{a^4}$ C) $4b^2$ D) $\frac{4a^4}{b^2}$

Objective: (0.2) Simplify Exponential Expression II

105) $\frac{8m^{-2}n^5}{m^2n^{-3}}$

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

Objective: (0.2) Simplify Exponential Expression II

106) $\frac{8r^{-1}(st)^2}{16(rs)^2t^{-1}}$

A) $\frac{s^4t^3}{2r^3}$ B) $\frac{t^3}{2r^3}$ C) $\frac{2t^3}{r^3}$ D) $\frac{t}{2r}$

Objective: (0.2) Simplify Exponential Expression II

107) $(-6x^{-5}y^{-2})^2$

A) $36x^{10}y^4$ B) $-\frac{36}{x^{10}y^4}$ C) $\frac{36}{x^{10}y^4}$ D) $\frac{x^{10}y^4}{36}$

Objective: (0.2) Simplify Exponential Expression II

108) $\frac{x^7(x^{-7})^{-9}}{(x^{-6})^{-3}}$

A) $\frac{1}{x^{74}}$ B) x^{52} C) x^{18} D) x^{74}

Objective: (0.2) Simplify Exponential Expression II

109) $\frac{x^7(x^2)^{-8}}{(x^{-7})^{-4}}$

A) x^{37} B) $\frac{1}{x^{37}}$ C) x^{12} D) $\frac{1}{x^{19}}$

Objective: (0.2) Simplify Exponential Expression II

110) $\left(\frac{tz^{-2}}{t^{-4}z}\right)^{-3}$

A) $\frac{t^9}{z^{15}}$ B) $\frac{t^6}{z^{12}}$ C) $\frac{z^9}{t^{15}}$ D) $\frac{z^6}{t^{12}}$

Objective: (0.2) Simplify Exponential Expression II

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111) $\left(\frac{3p^{-4}q}{3^{-1}m^3}\right)^2$

A) $\frac{81q^8q}{m^6}$ B) $\frac{9q^2}{m^3p^4}$ C) $\frac{81q^2}{m^6p^8}$ D) $\frac{9}{m^6p^8}$

Objective: (0.2) Simplify Exponential Expression II

Express the number in scientific notation.

112) 549

A) 5.49×10^3 B) 5.49×10^2 C) 5.49×10^{-2} D) 5.49×10^1

Objective: (0.2) Write Number in Scientific Notation

113) 110,000

A) 1.1×10^5 B) 1.1×10^4 C) 1.1×10^{-5} D) 1.1×10^{-4}

Objective: (0.2) Write Number in Scientific Notation

114) 5,300,000

A) 5.3×10^5 B) 5.3×10^{-5} C) 5.3×10^6 D) 5.3×10^{-6}

Objective: (0.2) Write Number in Scientific Notation

115) 0.000487

A) 4.87×10^{-4} B) 4.87×10^{-5} C) 4.87×10^4 D) 4.87×10^{-3}

Objective: (0.2) Write Number in Scientific Notation

116) 0.00008781

A) 8.781×10^{-5} B) 8.781×10^{-4} C) 8.781×10^4 D) 8.781×10^5

Objective: (0.2) Write Number in Scientific Notation

117) 0.0000063217

A) 6.3217×10^6 B) 6.3217×10^{-7} C) 6.3217×10^{-6} D) 6.3217×10^{-5}

Objective: (0.2) Write Number in Scientific Notation

118) 0.00000083008

A) 8.3008×10^{-6} B) 8.3008×10^7 C) 8.3008×10^{-7} D) 8.3008×10^6

Objective: (0.2) Write Number in Scientific Notation

119) 0.0000000804017

A) 8.04017×10^{-9} B) 8.04017×10^{-8} C) 8.04017×10^{-7} D) 8.04017×10^8

Objective: (0.2) Write Number in Scientific Notation

Solve the problem.

120) In a certain city, the bus system carried a total of 14,400,000,000 passengers. Write the number in scientific notation.

A) 1.44×10^9 B) 1.44×10^{11} C) 14.4×10^{10} D) 1.44×10^{10}

Objective: (0.2) Solve Apps: Integer Exponents and Scientific Notation

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121) A business projects next year's profits to be $80,200,000.
Write the number in scientific notation.

A) 8.02×10^{-8} B) 8.02×10^{8} C) 8.02×10^{7} D) 8.02×10^{6}

Objective: (0.2) Solve Apps: Integer Exponents and Scientific Notation

122) A computer compiles a program in 0.000575 seconds.
Write the number in scientific notation.

A) 5.75×10^{-5} B) 5.75×10^{-6} C) 5.75×10^{3} D) 5.75×10^{-4}

Objective: (0.2) Solve Apps: Integer Exponents and Scientific Notation

123) There are 2.292×10^{6} miles of highways, roads, and streets in a certain country.
Write the number as a decimal number.

A) 229,200,000 B) 2,292,000 C) 229,200 D) 22,920,000

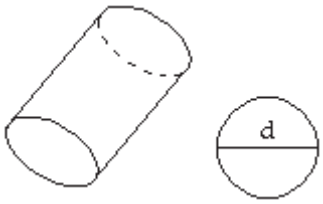
Objective: (0.2) Solve Apps: Integer Exponents and Scientific Notation

124) A display in the shape of a basketball has a volume of 369 cubic yards. Find the volume of the display that results by uniformly scaling the figure by a factor of 5. Use the fact that when you uniformly stretch or shrink a three- dimensional object in every direction by a factor of a, the volume of the resulting figure is scaled by a factor of a^3.

A) 9225 yd^3 B) 50,243,409 yd^3 C) 5535 yd^3 D) 46,125 yd^3

Objective: (0.2) Solve Apps: Integer Exponents and Scientific Notation

125) The cross section of one type of weight- bearing rod is a circle as shown in the figure below. The rod can handle a stress of 10,000 pounds per square inch (psi). The relationship between the stress S that the rod can handle, the load F the rod must carry, and the diameter, d of the cross section is given by the equation $S\pi(d/2)^2 = F$. If d = 4.6 inches, find the load the rod can support. Use $\pi \approx 3.14$ in your calculation.



A) 166,106 B) 664,424 C) 72,220 D) 52,900

Objective: (0.2) Solve Apps: Integer Exponents and Scientific Notation

Determine whether the given expression is a polynomial. If it is, write it in standard form.

126) $-6 + 18x$

A) Yes; $18x - 6$ B) No

Objective: (0.3) Determine Whether Expression is a Polynomial

127) $8x - \frac{7}{x} + 6$

A) Yes; $8x - \frac{7}{x} + 6$ B) No

Objective: (0.3) Determine Whether Expression is a Polynomial

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128) $8x^3 - 18 + 8x^2$

A) Yes; $8x^3 + 8x^2 - 18$ B) No

Objective: (0.3) Determine Whether Expression is a Polynomial

129) $\frac{3}{x^5} + \frac{5}{x^3} - 8$

A) Yes; $3x^5 + 5x^3 - 8$ B) No

Objective: (0.3) Determine Whether Expression is a Polynomial

130) $0.1x^9 - 7.9$

A) Yes; $0.1x^9 - 7.9$ B) No

Objective: (0.3) Determine Whether Expression is a Polynomial

131) $4x^{-1} + 2 + 7x$

A) Yes; $7x + 4x^{-1} + 2$ B) No

Objective: (0.3) Determine Whether Expression is a Polynomial

132) $4x + 10 + 6x^2$

A) Yes; $6x^2 + 4x + 10$ B) No

Objective: (0.3) Determine Whether Expression is a Polynomial

133) $\frac{2x - 5}{x}$

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

Objective: (0.3) Determine Whether Expression is a Polynomial

134) $x^2 - x^3 + x^4 - 9$

A) Yes; $x^4 - x^3 + x^2 - 9$ B) No

Objective: (0.3) Determine Whether Expression is a Polynomial

Determine the terms and degree of the polynomial.

135) $5x - 7$

A) Terms: 5x, 7; degree: 3 B) Terms: 5x, - 7; degree: 2

C) Terms: 5x, 7; degree: 2 D) Terms: 5x, - 7; degree: 1

Objective: (0.3) Find Degree and List Terms of Polynomial

136) $-5x^2 + x + 11$

A) Terms: $5x^2$, x, 11; degree: 4 B) Terms: $5x^2$, x, 11; degree: 2

C) Terms: $-5x^2$, x, 11; degree: 2 D) Terms: $-5x^2$, - x, 11; degree: 3

Objective: (0.3) Find Degree and List Terms of Polynomial

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137) $-8x^4 + 5x^3 - 5x^2 + x + 4$

A) Terms: $8x^4, 5x^3, 5x^2, x, -4$; degree: 10
B) Terms: $-8x^4, 5x^3, -5x^2, x, 4$; degree: 10
C) Terms: $8x^4, 5x^3, 5x^2, x, -4$; degree: 4
D) Terms: $-8x^4, 5x^3, -5x^2, x, 4$; degree: 4

Objective: (0.3) Find Degree and List Terms of Polynomial

138) $6x^4 - 7x^3 - x^2 - 3x + 14$

A) Terms: $6x^4, -7x^3, -x^2, -3x, 14$; degree: 4
B) Terms: $6x^4, 7x^3, x^2, 3x, 14$; degree: 5
C) Terms: $6x^4, -7x^3, -x^2, -3x, 14$; degree: 10
D) Terms: $6x^4, 7x^3, x^2, 3x, 14$; degree: 4

Objective: (0.3) Find Degree and List Terms of Polynomial

139) $-9x^2 + 5x^3 + x - 3$

A) Terms: $9x^2, 5x^3, x, 3$; degree: 3
B) Terms: $9x^2, 5x^3, x, 3$; degree: 2
C) Terms: $-9x^2, 5x^3, x, -3$; degree: 3
D) Terms: $-9x^2, 5x^3, x, -3$; degree: 2

Objective: (0.3) Find Degree and List Terms of Polynomial

140) $-4x^3 - 7x^2 - x + 10$

A) Terms: $-4x^3, -7x^2, -x, 10$; degree: 3
B) Terms: $-4x^3, -7x^2, -x, 10$; degree: 6
C) Terms: $4x^3, 7x^2, x, 10$; degree: 6
D) Terms: $4x^3, 7x^2, x, 10$; degree: 5

Objective: (0.3) Find Degree and List Terms of Polynomial

141) $7m^3 - m^2 - 5m + 10$

A) Terms: $7x^3, x^2, 5x, 10$; degree: 3
B) Terms: $7x^3, x^2, 5x, 10$; degree: 6
C) Terms: $7x^3, -x^2, -5x, 10$; degree: 3
D) Terms: $7x^3, -x^2, -5x, 10$; degree: 4

Objective: (0.3) Find Degree and List Terms of Polynomial

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

142) $(6x^2 + 9x - 4) + (18x + 4)$

A) $33x^3$
B) $6x^2 + 9x + 8$
C) $6x^2 + 27x - 8$
D) $6x^2 + 27x$

Objective: (0.3) Add or Subtract Polynomials

143) $(9x^2 + 9x + 5) + (3x^2 + 8x + 7)$

A) $8x^2 + 17x + 16$
B) $12x^2 + 17x + 12$
C) $12x^2 - 17x + 12$
D) $12x^2 + 17x - 12$

Objective: (0.3) Add or Subtract Polynomials

144) $(2x^4 - 8x^3) + (3x^4 + 6x^3)$

A) $3x^7$
B) $5x^8 - 2x^6$
C) $5x^4 - 2x^3$
D) $3x^{14}$

Objective: (0.3) Add or Subtract Polynomials

145) $(7x^7 + 7x^5 + 8x) + (3x^7 - 4x^5 - 4x)$

A) $10x^7 + 3x^5 + 4x$
B) $11x^7 + 3x^5 + 3x$
C) $17x^{13}$
D) $10x + 3x^7 + 4x^5$

Objective: (0.3) Add or Subtract Polynomials

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146) $(7x^5 + 15x^3 + 19) - (5x^5 + 7x^3 + 18)$

A) $2x^5 + 8x^3 + 1$ B) $2x^5 + 8x^3 + 37$ C) $2x^5 + 20x^3 + 37$ D) $11x^8$

Objective: (0.3) Add or Subtract Polynomials

147) $(3x^5 + 9x^3 + 15) - (9x^5 - 8x^3 + 12)$

A) $-6x^5 + 17x^3 + 3$ B) $-6x^5 + 17x^3 + 27$ C) $-6x^5 + 18x^3 + 27$ D) $14x^8$

Objective: (0.3) Add or Subtract Polynomials

148) $-6(x^2 + 8x + 1) + (2x^2 - x - 6)$

A) $-4x^2 - 48x - 12$ B) $-4x^2 - 49x - 5$ C) $-4x^2 - 49x - 12$ D) $-8x^2 - 49x - 12$

Objective: (0.3) Add or Subtract Polynomials

149) $6(4x^3 + x^2 - 1) - 7(5x^3 - 2x + 2)$

A) $-11x^3 + 6x^2 + 14x + 20$ B) $-11x^3 + x^2 + 14x - 20$

C) $-11x^3 + 6x^2 + 14x - 20$ D) $-11x^3 + 6x^2 - 14x - 20$

Objective: (0.3) Add or Subtract Polynomials

150) $(6x^2 + 4x + 7) + (2x^2 + 8x + 9) - (5x + 2)$

A) $8x^2 + 7x + 14$ B) $6x^2 + 7x + 18$ C) $6x^2 + 7x + 14$ D) $8x^2 + 7x + 18$

Objective: (0.3) Add or Subtract Polynomials

151) $(x^2 + 1) - (6x^2 - 7) + (x^2 + x + 7)$

A) $-6x^2 + x + 15$ B) $-4x^2 - 6x + 8$ C) $-5x^2 + x + 15$ D) $-4x^2 + x + 15$

Objective: (0.3) Add or Subtract Polynomials

152) $4x(-12x - 7)$

A) $-48x^2 - 28x$ B) $-12x^2 - 28x$ C) $-48x^2 - 7x$ D) $-76x^2$

Objective: (0.3) Multiply Polynomials (One Variable)

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

A) $x^2 - 28x - 3$ B) $x^2 - 4x - 28$ C) $x^2 - 3x - 28$ D) $x^2 - 3x - 3$

Objective: (0.3) Multiply Polynomials (One Variable)

154) $(-3x - 2)(-5x - 7)$

A) $-8x^2 + 31x + 14$ B) $-8x^2 + 31x + 31$ C) $15x^2 + 31x + 14$ D) $15x^2 + 31x + 31$

Objective: (0.3) Multiply Polynomials (One Variable)

155) $\left(2x + \frac{1}{10}\right)\left(11x - \frac{1}{5}\right)$

A) $22x^2 - \frac{3}{2}x - \frac{1}{50}$ B) $22x^2 + \frac{7}{10}x + \frac{1}{50}$ C) $22x^2 - \frac{7}{10}x + \frac{1}{50}$ D) $22x^2 + \frac{7}{10}x - \frac{1}{50}$

Objective: (0.3) Multiply Polynomials (One Variable)

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156) $(x - 11)(x^2 + 7x - 4)$

A) $x^3 - 4x^2 - 81x + 44$ B) $x^3 - 4x^2 - 73x - 44$ C) $x^3 + 18x^2 + 73x - 44$ D) $x^3 + 18x^2 + 81x + 44$

Objective: (0.3) Multiply Polynomials (One Variable)

157) $(4x + 6)^2$

A) $16x^2 + 48x + 36$ B) $4x^2 + 47x + 36$ C) $16x^2 + 36x + 48$ D) $4x^2 + 48x + 47$

Objective: (0.3) Multiply Polynomials (One Variable)

158) $(4x - 9)(4x + 9)$

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

Objective: (0.3) Multiply Polynomials (One Variable)

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

A) $-14x + 49$ B) $x + 49$ C) $x^2 + 49$ D) $-14x$

Objective: (0.3) Multiply Polynomials (One Variable)

160) $(5x + 3)^3$

A) $125x^3 + 225x^2 + 225x + 27$ B) $125x^3 + 225x^2 + 135x + 27$

C) $25x^2 + 30x + 9$ D) $25x^6 + 15x^3 + 729$

Objective: (0.3) Multiply Polynomials (One Variable)

161) $(x - 7)(x^2 + 7x + 49)$

A) $x^2 - 343$ B) $x^2 + 49x - 343$ C) $x^3 - 343$ D) $x^3 - 7x - 343$

Objective: (0.3) Multiply Polynomials (One Variable)

162) $(x + 9y)(x + 3y)$

A) $x^2 + 9xy + 27y^2$ B) $x + 12xy + 27y$ C) $x^2 + 12xy + 27y^2$ D) $x^2 + 12xy + 12y^2$

Objective: (0.3) Multiply Polynomials (Two Variables)

163) $(-3x + 2y)(2x - 4y)$

A) $-6x^2 + 4xy - 8y^2$ B) $-6x^2 + 16xy - 8y^2$ C) $-6x^2 + 12xy - 8y^2$ D) $-6x^2 + 16xy + 16y^2$

Objective: (0.3) Multiply Polynomials (Two Variables)

164) $(x + 12y)(x - 12y)$

A) $x^2 - 24xy - 144y^2$ B) $x^2 - 24y^2$ C) $x^2 - 144y^2$ D) $x^2 + 24xy - 144y^2$

Objective: (0.3) Multiply Polynomials (Two Variables)

165) $(5x + 12y)(5x - 12y)$

A) $25x^2 + 120xy - 144y^2$ B) $10x^2 - 24y^2$

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

Objective: (0.3) Multiply Polynomials (Two Variables)

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166) $(x + y)^2$

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

Objective: (0.3) Multiply Polynomials (Two Variables)

167) $(3x - y)^2$

A) $9x^2 + y^2$ B) $9x^2 - 6xy + y^2$ C) $9x^2 - 3xy + y^2$ D) $9x^2 - 6xy - 2y^2$

Objective: (0.3) Multiply Polynomials (Two Variables)

168) $(6x + 11y)^2$

A) $36x^2 + 132xy + 121y^2$ B) $6x^2 + 132xy + 121y^2$

C) $6x^2 + 121y^2$ D) $36x^2 + 121y^2$

Objective: (0.3) Multiply Polynomials (Two Variables)

169) $(3x - 4y)^2$

A) $3x^2 + 16y^2$ B) $9x^2 - 24xy + 16y^2$ C) $9x^2 + 16y^2$ D) $3x^2 - 24xy + 16y^2$

Objective: (0.3) Multiply Polynomials (Two Variables)

170) $(5x + y)^2(5x - y)^2$

A) $625x^4 - 125x^2y^2 + y^4$ B) $625x^4 + 125x^2y^2 + y^4$

C) $625x^4 - 50x^2y^2 + y^4$ D) $625x^4 - 125x^2y^2 - y^4$

Objective: (0.3) Multiply Polynomials (Two Variables)

171) $(x + 4y)(x - 4y)^3$

A) $x^4 - 16x^3y + 64xy^3 - 256y^4$ B) $x^4 + 16x^3y - 64xy^3 - 256y^4$

C) $x^4 - 8x^3y + 128xy^3 - 256y^4$ D) $x^4 + 8x^3y - 128xy^3 - 256y^4$

Objective: (0.3) Multiply Polynomials (Two Variables)

Solve the problem.

172) A manufacturer of medical supplies produces 1- liter bags of saline solution. The cost in thousands of dollars to produce x thousand bags of saline is $1.6x^2 - 5.0x + 2.2$. Find the cost to produce 3000 units.

A) $1600 B) $22,000 C) $1.6 million D) $31,600

Objective: (0.3) Solve Apps: Polynomials

173) The height of an object dropped from a tall building is $h_0 - 16t^2$, where t is the elapsed time in seconds and h_0 is the initial height in feet. If a package is dropped from an initial height of 600 feet, what is its height after 5 seconds?

A) 300 ft B) 900 ft C) 344 ft D) 200 ft

Objective: (0.3) Solve Apps: Polynomials

174) If the population of a small town is modeled by $14t^2 + 7500$, where t is in years and t = 0 corresponds to the year 1960 and t = 1 corresponds the year 1970, what was the population of the town in 1980?

A) 7556 B) 7514 C) 7500 D) 7626

Objective: (0.3) Solve Apps: Polynomials

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175) An airline decides to reduce ticket prices by x dollars form the current price of $657. (i) Write a polynomial that gives the new price after the x- dollar deduction. (ii) The revenue is the number of tickets sold times the price of each ticket. If 70 tickets were sold when the price was $657 and 10 additional tickets are sold for each dollar the price is reduced, write a polynomial that gives the revenue in terms of x when the original price is reduced by x dollars.

A) (i) $-x+657$
(ii) $10x^2 - 6570x + 45{,}990$

B) (i) $-x+657$
(ii) $-10x^2 + 6570x + 45{,}990$

C) (i) $-x-657$
(ii) $10x^2 + 45{,}990x + 6570$

D) (i) $-x-657$
(ii) $-10x^2 - 45{,}990x + 6570$

Objective: (0.3) Solve Apps: Polynomials

176) A dealer who rents appliances wants to increase the monthly rent from the current $60 in n increases of $4. (i) Write a polynomial that gives the new price after n increases of $4. (ii) The revenue is the number of appliances rented times the monthly rent for each appliance. If 100 appliances can be rented at $60 per month and 21 fewer appliances can be rented for each $4 rent increase, write a polynomial that gives the monthly revenue in terms of n.

A) (i) $4n - 60$
(ii) $-84n^2 + 6000$

B) (i) $4n - 60$
(ii) $-84n^2 - 860n - 240$

C) (i) $4n + 60$
(ii) $-84n^2 + 240$

D) (i) $4n + 60$
(ii) $-84n^2 - 860n + 6000$

Objective: (0.3) Solve Apps: Polynomials

Factor the polynomial by removing any common monomial factor.

177) $2x + 8$

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

Objective: (0.4) Factor Out Common Monomial Factor

178) $7x + 14$

A) $14(x+1)$ B) $7(7x+2)$ C) $7(x+14)$ D) $7(x+2)$

Objective: (0.4) Factor Out Common Monomial Factor

179) $4x^2 - 32x$

A) $x(4x - 32)$ B) $4(x^2 - 8x)$ C) $4x(x - 8x)$ D) $4x(x - 8)$

Objective: (0.4) Factor Out Common Monomial Factor

180) $3x^3 + 12x$

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

Objective: (0.4) Factor Out Common Monomial Factor

181) $7x^4 - 21x^2$

A) $21x^2(x^2 - 1)$ B) $7x^2(x^2 - 21)$ C) $7x^2(x^2 - 3)$ D) $7(x^4 - 3x)$

Objective: (0.4) Factor Out Common Monomial Factor

182) $5x^2 - 10x - 25$

A) $5x(x^2 - 2x - 5)$ B) $5(x^2 - 2x - 5)$ C) $5(x^2 - 10x - 25)$ D) $5(x^2 - 5x - 20)$

Objective: (0.4) Factor Out Common Monomial Factor

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183) $4x^3 + 8x^2 - 2x$

A) $2(2x^3 + 4x^2 - x)$ B) $2x(2x^2 + 4x - 2)$ C) $2x(2x^2 + 4x + 1)$ D) $2x(2x^2 + 4x - 1)$

Objective: (0.4) Factor Out Common Monomial Factor

184) $27x^4 - 6x^3 + 15x^2$

A) $x^2(27x^2 - 6x + 15)$ B) $3(9x^4 - 2x^3 + 5x^2)$ C) $3x^2(9x^2 - 2x + 5)$ D) $3x(9x^3 - 2x^2 + 5x)$

Objective: (0.4) Factor Out Common Monomial Factor

185) $9x^4 + 24x^3 + 30x^2 - 3x$

A) $3(3x^4 + 8x^3 + 10x^2 - x)$ B) $3x(3x^3 + 8x^2 + 10x - 1)$

C) $3x^2(3x^2 + 8x + 10)$ D) $3x(3x^3 + 8x^2 - 10x - 1)$

Objective: (0.4) Factor Out Common Monomial Factor

186) $48ax^9 + 6ax^4 - 30ax^2$

A) $6a(8x^9 + x^4 - 5x^2)$ B) $6ax^2(8x^7 + x^2 - 5)$

C) $ax^2(48x^7 + 6x^2 - 30)$ D) $-ax^2(-48x^7 + 6x^2 + 30)$

Objective: (0.4) Factor Out Common Monomial Factor

Factor by grouping.

187) $x^3 - 4x^2 + 2x - 8$

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

Objective: (0.4) Factor by Grouping

188) $x^3 + 2x^2 + 8x + 16$

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

Objective: (0.4) Factor by Grouping

189) $5x^3 + 25x^2 + 9x + 45$

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

Objective: (0.4) Factor by Grouping

190) $2x^3 - 10x^2 - 3x + 15$

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

Objective: (0.4) Factor by Grouping

191) $x^4 - 7x^3 - 8x^2 + 56x$

A) $x(x^2 - 7)(x - 8)$ B) $x(x^2 - 8)(x - 7)$ C) $x(x^2 + 8)(x - 7)$ D) $(x^3 - 8)(x + 7)$

Objective: (0.4) Factor by Grouping

Factor the trinomial or state that the trinomial is irreducible.

192) $x^2 - x - 6$

A) $(x + 3)(x - 2)$ B) irreducible C) $(x + 1)(x - 5)$ D) $(x + 2)(x - 3)$

Objective: (0.4) Factor Trinomial

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193) $x^2 + 2x - 80$

A) irreducible B) $(x - 10)(x + 8)$ C) $(x + 10)(x - 8)$ D) $(x - 10)(x + 1)$

Objective: (0.4) Factor Trinomial

194) $x^2 - x - 45$

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

Objective: (0.4) Factor Trinomial

195) $x^2 - 4x - 60$

A) irreducible B) $(x + 6)(x - 10)$ C) $(x - 6)(x + 1)$ D) $(x - 6)(x + 10)$

Objective: (0.4) Factor Trinomial

196) $20x^2 + 31x + 12$

A) $(4x + 3)(5x + 4)$ B) $(4x - 3)(5x - 4)$ C) irreducible D) $(20x + 3)(x + 4)$

Objective: (0.4) Factor Trinomial

197) $8x^2 - 18x + 9$

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

Objective: (0.4) Factor Trinomial

198) $5x^2 - 6x - 8$

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

Objective: (0.4) Factor Trinomial

199) $5x^2 + 17x + 12$

A) $(5x + 4)(x - 3)$ B) irreducible C) $(5x - 3)(x + 4)$ D) $(5x + 3)(x - 4)$

Objective: (0.4) Factor Trinomial

200) $6x^2 - 29x + 20$

A) irreducible B) $(6x + 15)(6x - 5)$ C) $(x - 4)(6x - 5)$ D) $(x + 4)(6x - 5)$

Objective: (0.4) Factor Trinomial

201) $15x^2 + 29x + 12$

A) $(15x + 4)(x + 3)$ B) $(3x - 4)(5x - 3)$ C) irreducible D) $(3x + 4)(5x + 3)$

Objective: (0.4) Factor Trinomial

Factor the polynomial as a perfect square or state that it is irreducible.

202) $x^2 + 10x + 25$

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

Objective: (0.4) Factor Perfect-Square Trinomial

203) $x^2 - 20x + 400$

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

Objective: (0.4) Factor Perfect-Square Trinomial

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204) $9x^2 - 6x + 1$

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

Objective: (0.4) Factor Perfect-Square Trinomial

205) $49x^2 - 70x + 25$

A) $(7x - 5)^2$ B) $(7x + 5)(7x - 5)$ C) $(7x + 5)^2$ D) $(7x - 6)^2$

Objective: (0.4) Factor Perfect-Square Trinomial

206) $9x^2 + 24x + 16$

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

Objective: (0.4) Factor Perfect-Square Trinomial

207) $4x^2 - 4x + 1$

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

Objective: (0.4) Factor Perfect-Square Trinomial

Factor the polynomial as the difference of two squares or state that it is irreducible.

208) $x^2 - 49$

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

Objective: (0.4) Factor Difference of Two Squares

209) $144x^2 - 121$

A) $(12x + 11)^2$ B) irreducible C) $(12x - 11)^2$ D) $(12x + 11)(12x - 11)$

Objective: (0.4) Factor Difference of Two Squares

210) $x^4 - 625$

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

C) irreducible D) $(x + 5)^2(x - 5)^2$

Objective: (0.4) Factor Difference of Two Squares

211) $16x^4 - 81$

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

C) $(4x^2 + 9)(4x^2 + 9)$ D) $(2x + 3)^2(2x - 3)^2$

Objective: (0.4) Factor Difference of Two Squares

212) $16x^4 - 25$

A) $(16x^2 + 1)(x^2 - 25)$ B) $(4x^2 + 5)^2$ C) $(4x^2 - 5)^2$ D) $(4x^2 + 5)(4x^2 - 5)$

Objective: (0.4) Factor Difference of Two Squares

213) $4 - x^2$

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

Objective: (0.4) Factor Difference of Two Squares

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Factor the polynomial as the sum or difference of two cubes.

214) $x^3 - 27$

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

Objective: (0.4) Factor Sum or Difference of Two Cubes

215) $x^3 + 512$

A) $(x - 512)(x^2 - 1)$ B) $(x + 8)(x^2 - 8x + 64)$ C) $(x - 8)(x^2 + 8x + 64)$ D) $(x + 8)(x^2 + 64)$

Objective: (0.4) Factor Sum or Difference of Two Cubes

216) $8 - x^3$

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

Objective: (0.4) Factor Sum or Difference of Two Cubes

217) $216x^3 - 1$

A) $(216x - 1)(x^2 + 6x + 1)$ B) $(6x + 1)(36x^2 - 6x + 1)$

C) $(6x - 1)(36x^2 + 6x + 1)$ D) $(6x - 1)(36x^2 + 1)$

Objective: (0.4) Factor Sum or Difference of Two Cubes

218) $64x^3 + 125$

A) $(4x + 5)(16x^2 + 25)$ B) $(64x + 5)(x^2 - 20x + 25)$

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

Objective: (0.4) Factor Sum or Difference of Two Cubes

Factor the polynomial completely. If a polynomial cannot be factored, state that it is irreducible.

219) $x^2 + 16$

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

Objective: (0.4) Factor Polynomial Completely

220) $3x^3 + 3x^2 - 18x$

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

Objective: (0.4) Factor Polynomial Completely

221) $x^2 - x - 54$

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

Objective: (0.4) Factor Polynomial Completely

222) $6x^2 - 26x - 20$

A) $2(3x - 2)(x + 5)$ B) irreducible C) $2(3x + 2)(x - 5)$ D) $(6x + 4)(x - 5)$

Objective: (0.4) Factor Polynomial Completely

223) $125x^2 - 400x + 320$

A) $5(5x - 8)^2$ B) $(25x - 40)(5x - 8)$ C) irreducible D) $5(25x^2 - 80x + 64)$

Objective: (0.4) Factor Polynomial Completely

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224) $x^2 + 2xy - 15y^2$

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

Objective: (0.4) Factor Polynomial Completely

225) $98x^4 - 50x^2$

A) $2x^2(7x + 5)(7x - 5)$ B) irreducible C) $2(7x^2 + 5)(7x^2 - 5)$ D) $2x^2(7x - 5)^2$

Objective: (0.4) Factor Polynomial Completely

226) $x^3 + 14x^2y + 49xy^2$

A) irreducible B) $xy(x + 7)^2$ C) $x(x + 7y)^2$ D) $x(x - 7y)^2$

Objective: (0.4) Factor Polynomial Completely

227) $4x^2 - 20x + 25 - y^2$

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

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

Objective: (0.4) Factor Polynomial Completely

228) $64x^2 - 144x + 81 - 49y^2$

A) $(8x + 9 + 7y)(8x + 9 - 7y)$ B) $(8x - 9 + 7y)(8x - 9 - 7y)$

C) $(8x + 9 + 7y)(8x - 9 - 7y)$ D) irreducible

Objective: (0.4) Factor Polynomial Completely

Solve the problem.

229) A rectangular window pane must have a perimeter of 120 centimeters. Write a completely factored polynomial whose values give the area of the window pane if one side is x centimeters long.

A) $x(60 - x)$ B) $x(30 - x)^2$ C) $x(x - 90)$ D) $x^2(30 - x)$

Objective: (0.4) Solve Apps: Factoring Polynomials

230) A rectangular parking lot must have a perimeter of 156 feet. Write a completely factored polynomial whose values give the area of the parking lot if one side is x feet long.

A) $x(78 - x)$ B) $41(x - 37)$ C) $37(x - 1)$ D) $x(41 - x)$

Objective: (0.4) Solve Apps: Factoring Polynomials

231) A square box with an open top is to be constructed from a rectangular piece of cardboard with side length 14 inches by cutting out equal squares of side length x at each corner and then folding up the sides. Write a completely factored polynomial whose values give the volume of the box.

A) $4x(7 - x)^2$ B) $4x(7 - x)(7 + x)$ C) $4x(3.5 - x)(3.5 + x)$ D) $4x(3.5 - x)^2$

Objective: (0.4) Solve Apps: Factoring Polynomials

232) A square box with an open top is to be constructed from a rectangular piece of cardboard with side length 17 inches by cutting out equal squares of side length x at each corner and then folding up the sides. Write a completely factored polynomial whose values give the surface area of the box.

A) $8x(8.5 - x)$ B) $4(8.5 + x)^2$ C) $8x(8.5 + x)$ D) $4(8.5 - x)^2$

Objective: (0.4) Solve Apps: Factoring Polynomials

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233) A washer is made by removing a circular disk from the center of another circular disk of radius 4 mi. If the disk that is removed has radius x, write a completely factored polynomial whose values give the area of the washer.

A) $\pi(4 - x)^2$ B) $\pi(8 - x)^2$ C) $\pi(4 - x)(4 + x)$ D) $\pi(8 - x)(8 + x)$

Objective: (0.4) Solve Apps: Factoring Polynomials

234) Insulation must be put into the space between two concentric cylinders. Write a completely factored polynomial whose values give the volume between the inner and outer cylinder if the inner cylinder has radius 15 meters the outer cylinder has radius x meters, and both cylinders are 19 meters high.

A) $34\pi(x - 19)^2$ B) $19\pi(x - 15)(x + 15)$ C) $34\pi(x - 19)(x + 19)$ D) $19\pi(x - 15)^2$

Objective: (0.4) Solve Apps: Factoring Polynomials

235) A rancher has 2200 feet of fencing that will fence off a rectangular grazing pen for cattle. One edge of the pen borders a straight creek and will need no fence. If the edges of the pen perpendicular to the creek are x feet long, write a completely factored polynomial whose values give the area of the pen.

A) $2x(570 + x)$ B) $2x(1100 + x)$ C) $2x(570 - x)$ D) $2x(1100 - x)$

Objective: (0.4) Solve Apps: Factoring Polynomials

236) A decorative slate centerpiece for a kitchen island has the shape of a rectangle with a semicircular section attached at each end. The radii of the semicircles measure $\frac{x}{2}$ inches. The perimeter of the centerpiece is 52 inches. Write a completely factored polynomial whose values give the area of the centerpiece.

A) $\frac{1}{4}x(104 - \pi x)$ B) $\frac{1}{2}x(52 - \pi x)$ C) $\frac{1}{4}x(52 - \pi x)$ D) $\frac{1}{2}x(104 - \pi x)$

Objective: (0.4) Solve Apps: Factoring Polynomials

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

237) $\frac{7 - x}{x - 7}$

A) $-x, x \neq 7$ B) $-1, x \neq 7$

C) Already in lowest terms D) $1, x \neq 7$

Objective: (0.5) Reduce Rational Expression to Lowest Terms

238) $\frac{7x^2 - 38x + 15}{x - 5}$

A) $7x^2 - 41$, no restrictions on x B) $\frac{7x^2 - 38x + 15}{x - 5}, x \neq 5$

C) $\frac{1}{x - 5}, x \neq 5$ D) $7x - 3, x \neq 5$

Objective: (0.5) Reduce Rational Expression to Lowest Terms

239) $\frac{x^2 - 36}{x - 6}$

A) $\frac{1}{x - 6}, x \neq 6$ B) $x - 6, x \neq 6$ C) $\frac{1}{x + 6}, x \neq -6$ D) $x + 6, x \neq 6$

Objective: (0.5) Reduce Rational Expression to Lowest Terms

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240) $\frac{7 - x}{x^2 - 49}$

A) $-\frac{1}{x+7}, x \neq -7, 7$ B) $\frac{1}{x-7}, x \neq 7$ C) $-\frac{1}{x-7}, x \neq -7, 7$ D) $\frac{1}{x+7}, x \neq -7$

Objective: (0.5) Reduce Rational Expression to Lowest Terms

241) $\frac{3x+2}{12x^2+23x+10}$

A) $\frac{3x+4}{4x+23}, x \neq -\frac{23}{4}$

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

C) $\frac{3x+2}{12x^2+23x+10}, x \neq -\frac{5}{4}, x \neq -\frac{2}{3}$

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

Objective: (0.5) Reduce Rational Expression to Lowest Terms

242) $\frac{x^2+9x+20}{x^2+12x+32}$

A) $\frac{9x+5}{12x+8}, x \neq -\frac{2}{3}$

B) $-\frac{x^2+9x+20}{x^2+12x+32}, x \neq -8, -4$

C) $\frac{9x+20}{12x+32}, x \neq -\frac{8}{3}$

D) $\frac{x+5}{x+8}, x \neq -8, -4$

Objective: (0.5) Reduce Rational Expression to Lowest Terms

Multiply. Simplify and leave the numerator and denominator in your answer in factored form.

243) $\frac{5x}{10x+5} \cdot \frac{4x+2}{7}$

A) $\frac{2x}{7}$ B) $\frac{2}{7}$ C) $\frac{x}{7}$ D) $\frac{2x}{35}$

Objective: (0.5) Multiply Rational Expressions

244) $\frac{4x - 4}{x} \cdot \frac{3x^2}{9x - 9}$

A) $\frac{12x^3 - 12x^2}{9x^2 - 9x}$ B) $\frac{4x}{3}$ C) $\frac{36x^2+72x+36}{3x^3}$ D) $\frac{3}{4x}$

Objective: (0.5) Multiply Rational Expressions

245) $\frac{8x+2}{2x - 4} \cdot \frac{x - 2}{36x+9}$

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

Objective: (0.5) Multiply Rational Expressions

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246) $\frac{x^3+1}{x^3-x^2+x} \cdot \frac{12x}{-36x-36}$

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

Objective: (0.5) Multiply Rational Expressions

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

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

Objective: (0.5) Multiply Rational Expressions

248) $\frac{x^2+6x+8}{x^2+9x+14} \cdot \frac{x^2+7x}{x^2-4x-32}$

A) $\frac{x}{x-8}$ B) $\frac{x}{x^2+9x+14}$ C) $\frac{1}{x-8}$ D) $\frac{x(x+7)}{x-8}$

Objective: (0.5) Multiply Rational Expressions

249) $\frac{x^2+9x+14}{x^2+10x+21} \cdot \frac{x^2+3x}{x^2+8x+12}$

A) $\frac{x^2+3x}{x+6}$ B) $\frac{x}{x^2+10x+21}$ C) $\frac{x}{x+6}$ D) $\frac{1}{x+6}$

Objective: (0.5) Multiply Rational Expressions

250) $\frac{x^2+13x+36}{x^2+12x+27} \cdot \frac{x^2+5x+6}{x^2+6x+8}$

A) 1 B) $\frac{1}{x+2}$ C) $\frac{x+4}{x+3}$ D) $\frac{x+3}{x+2}$

Objective: (0.5) Multiply Rational Expressions

251) $\frac{x^2-9x+14}{x^2-11x+24} \cdot \frac{x^2-13x+40}{x^2-3x+2}$

A) $\frac{(x-7)}{(x-1)}$

B) $\frac{(x+7)(x+5)}{(x+3)(x+1)}$

C) $\frac{(x-7)(x-5)}{(x-3)(x-1)}$

D) $\frac{(x^2-9x+14)(x^2-13x+40)}{(x^2-11x+24)(x^2-3x+2)}$

Objective: (0.5) Multiply Rational Expressions

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252) $\frac{10x^2 - 3x - 4}{5x^2 - x - 4} \cdot \frac{15x^2 + 12x}{1 - 4x^2}$

A) $\frac{(5x + 4)(5x - 4)}{(1 - 2x)(x - 1)}$ B) $\frac{3x(5x - 4)}{(1 - 2x)(x - 1)}$ C) $\frac{3x}{(1 - 2x)(x - 1)}$ D) $\frac{3x(5x + 4)}{(1 - 2x)(x - 1)}$

Objective: (0.5) Multiply Rational Expressions

Divide and/or multiply as indicated. Simplify and leave the numerator and denominator in your answer in factored form.

253) $\frac{2x + 10}{12} \div \frac{3x + 15}{15}$

A) $\frac{1}{30}$ B) $\frac{5x + 25}{27}$ C) $\frac{2x + 10}{36x}$ D) $\frac{5}{6}$

Objective: (0.5) Divide Rational Expressions

254) $\frac{27x - 27}{8} \div \frac{9x - 9}{40}$

A) $\frac{5(27x - 27)}{9x - 9}$ B) 15 C) $\frac{1}{15}$ D) $\frac{243(x - 1)^2}{320}$

Objective: (0.5) Divide Rational Expressions

255) $\frac{1}{x + 6} \div \frac{5}{x^2 - 36}$

A) $\frac{5}{x - 6}$ B) $x - 6$ C) $\frac{x + 6}{5}$ D) $\frac{x - 6}{5}$

Objective: (0.5) Divide Rational Expressions

256) $\frac{5x - 15}{x} \div \frac{x - 3}{x^3}$

A) $\frac{1}{5x^2}$ B) $\frac{5x^2 - 30x + 45}{x^4}$ C) $5x^2$ D) $5x^2 + 5x$

Objective: (0.5) Divide Rational Expressions

257) $\frac{x^2 - 25}{x^2 - 8x + 16} \div \frac{10x - 50}{x^2 - x - 12}$

A) $\frac{(x - 5)(x + 3)}{10(x - 4)}$ B) $\frac{10(x + 5)}{(x + 3)(x - 4)}$ C) $x + 3$ D) $\frac{(x + 5)(x + 3)}{10(x - 4)}$

Objective: (0.5) Divide Rational Expressions

258) $\frac{x^2 - 64}{x} \div \frac{x + 8}{x - 4}$

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

Objective: (0.5) Divide Rational Expressions

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259) $\frac{x^2 - 18x + 81}{7x - 63} \div \frac{5x - 45}{35}$

A) $\frac{(x - 9)^2}{49}$ B) 35 C) 1 D) $\frac{x^2 - 18x + 81}{(x - 9)^2}$

Objective: (0.5) Divide Rational Expressions

260) $\frac{x^2 + 11x + 30}{x^2 + 13x + 40} \div \frac{x^2 + 6x}{x^2 + 15x + 56}$

A) $\frac{x}{x^2 + 13x + 40}$ B) $x + 7$ C) $\frac{x + 7}{x}$ D) $\frac{x + 7}{x^2 + 8x}$

Objective: (0.5) Divide Rational Expressions

261) $\frac{x^2 + 6x + 8}{x^2 + 7x + 12} \div \frac{x^2 + 2x}{x^2 - 4x - 21}$

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

Objective: (0.5) Divide Rational Expressions

262) $\frac{5x^2 + 38x - 63}{3x - 6} \cdot \frac{x^2 - 2x}{25x^2 - 49} \div \frac{8x + 72}{5x^3}$

A) $\frac{5x^3}{24(5x + 7)}$ B) $\frac{24}{5x^4(5x + 7)}$ C) $\frac{5x^4}{24(5x + 7)}$ D) $\frac{8(x + 9)^2}{15x^2(5x + 7)}$

Objective: (0.5) Divide Rational Expressions

Add and subtract as indicated. Simplify and leave the numerator and denominator in your answer in factored form.

263) $\frac{7x}{x - 8} - \frac{56}{x - 8}$

A) $\frac{7x - 56}{x - 16}$ B) 7 C) $7x$ D) $\frac{1}{7}$

Objective: (0.5) Add/Subtract Rational Expressions (Same or Opposite Denominators)

264) $\frac{2x + 4}{3x + 7} + \frac{4x + 10}{3x + 7}$

A) $\frac{2}{3x + 7}$ B) $\frac{4x + 8}{3x + 7}$ C) 2 D) 1

Objective: (0.5) Add/Subtract Rational Expressions (Same or Opposite Denominators)

265) $\frac{x^2 - 2x}{x^2 + 6x} + \frac{x^2 + x}{x^2 + 6x}$

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

Objective: (0.5) Add/Subtract Rational Expressions (Same or Opposite Denominators)

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266) $\frac{x^2 - 9x}{x - 4} + \frac{20}{x - 4}$

A) $\frac{x^2 - 9x + 20}{x - 4}$ B) $x - 5$ C) $x - 4$ D) $x + 5$

Objective: (0.5) Add/Subtract Rational Expressions (Same or Opposite Denominators)

267) $\frac{5x + 9}{x^2 + 10x + 24} + \frac{-3 - 4x}{x^2 + 10x + 24}$

A) $\frac{x - 6}{x^2 + 10x + 24}$ B) $\frac{1}{x^2 + 10x + 24}$ C) $\frac{1}{x + 6}$ D) $\frac{1}{x + 4}$

Objective: (0.5) Add/Subtract Rational Expressions (Same or Opposite Denominators)

268) $\frac{x^2 - 8}{x^2 - 3x - 18} + \frac{-2x - 7}{x^2 - 3x - 18}$

A) $\frac{x - 5}{x - 6}$ B) $\frac{x + 3}{x - 6}$ C) $\frac{x - 5}{x^2 - 3x - 18}$ D) $\frac{(x - 3)(x + 5)}{(x + 3)(x - 6)}$

Objective: (0.5) Add/Subtract Rational Expressions (Same or Opposite Denominators)

269) $\frac{3x}{x^2 - 7x + 12} - \frac{9}{x^2 - 7x + 12}$

A) $\frac{3}{x - 4}$ B) $\frac{3(x + 3)}{(x - 3)(x - 4)}$ C) $\frac{3(x - 3)}{(x + 3)(x - 4)}$ D) $\frac{3}{x - 3}$

Objective: (0.5) Add/Subtract Rational Expressions (Same or Opposite Denominators)

270) $\frac{8x - 7}{x^2 + 2x - 48} - \frac{7x - 1}{x^2 + 2x - 48}$

A) $\frac{1}{x^2 + 2x - 48}$ B) $\frac{1}{x - 6}$ C) $\frac{1}{x + 8}$ D) $\frac{x + 6}{x^2 + 2x - 48}$

Objective: (0.5) Add/Subtract Rational Expressions (Same or Opposite Denominators)

271) $\frac{7}{x - 2} + \frac{5}{2 - x}$

A) $\frac{-2}{x - 2}$ B) $\frac{2}{x - 2}$ C) $\frac{35}{x - 2}$ D) $\frac{12}{x - 2}$

Objective: (0.5) Add/Subtract Rational Expressions (Same or Opposite Denominators)

272) $\frac{y}{x - 7} + \frac{3}{7 - x}$

A) $\frac{x + 3}{2(x - 7)}$ B) $\frac{x - 3}{2(x - 7)}$ C) $\frac{x + 3}{x - 7}$ D) $\frac{x - 3}{x - 7}$

Objective: (0.5) Add/Subtract Rational Expressions (Same or Opposite Denominators)

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Find the LCD for the rational expression.

273) $\frac{1}{x+3}, \frac{1}{8}$

A) $x+3$ B) 8 C) $8x+3$ D) $8(x+3)$

Objective: (0.5) Find the LCD of Rational Fractions

274) $\frac{1}{2x-1}, \frac{1}{x+1}$

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

Objective: (0.5) Find the LCD of Rational Fractions

275) $\frac{1}{x-5}, \frac{1}{x^2-25}$

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

Objective: (0.5) Find the LCD of Rational Fractions

276) $\frac{1}{6x^2}, \frac{1}{6x-6}$

A) $36x^2(x-1)$ B) $6x^2(x-1)$ C) $6x(x-1)$ D) $6(x-1)$

Objective: (0.5) Find the LCD of Rational Fractions

277) $\frac{2}{3}, \frac{x}{3x-1}, \frac{x}{3x+6}$

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

Objective: (0.5) Find the LCD of Rational Fractions

278) $\frac{1}{x}, \frac{1}{x^2+6x}, \frac{1}{5x}$

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

Objective: (0.5) Find the LCD of Rational Fractions

279) $\frac{3}{x^2-2x}, \frac{7}{x^2-7x+10}$

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

Objective: (0.5) Find the LCD of Rational Fractions

280) $\frac{1}{x^2-5x+6}, \frac{x}{x^2-8x+12}$

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

Objective: (0.5) Find the LCD of Rational Fractions

281) $\frac{-2x}{x^2+4x-12}, \frac{7}{5x+30}$

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

Objective: (0.5) Find the LCD of Rational Fractions

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282) $\frac{1}{8x+16}, \frac{1}{x^2-4}, \frac{1}{x}$

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

Objective: (0.5) Find the LCD of Rational Fractions

Add and subtract as indicated. Simplify and leave the numerator and denominator in your answer in factored form.

283) $\frac{5}{x}+\frac{7}{x-3}$

A) $\frac{12x-15}{x(x-3)}$ B) $\frac{15x-12}{x(x-3)}$ C) $\frac{15x-12}{x(3-x)}$ D) $\frac{12x-15}{x(3-x)}$

Objective: (0.5) Add/Subtract Rational Expressions (Different Denominators)

284) $\frac{3}{x+4}-\frac{6}{x-4}$

A) $\frac{-3x-36}{(x+4)(x-4)}$ B) $\frac{-3x+12}{(x+4)(x-4)}$ C) $\frac{-3x+36}{(x+4)(x-4)}$ D) $\frac{-3}{(x+4)(x-4)}$

Objective: (0.5) Add/Subtract Rational Expressions (Different Denominators)

285) $\frac{16x}{x^2-64}-\frac{x}{x-8}$

A) $\frac{-x}{x+8}$ B) $\frac{24x-x^2}{(x+8)(x-8)}$ C) $\frac{-x^3+16x^2-64x}{(x-8)(x^2-64)}$ D) $\frac{15x}{(x+8)(x-8)}$

Objective: (0.5) Add/Subtract Rational Expressions (Different Denominators)

286) $\frac{2}{x^2-3x+2}+\frac{5}{x^2-1}$

A) $\frac{7x-8}{(x-1)(x-2)}$ B) $\frac{8x-7}{(x-1)(x+1)(x-2)}$ C) $\frac{7x-8}{(x-1)(x+1)(x-2)}$ D) $\frac{20x-8}{(x-1)(x+1)(x-2)}$

Objective: (0.5) Add/Subtract Rational Expressions (Different Denominators)

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

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

Objective: (0.5) Add/Subtract Rational Expressions (Different Denominators)

288) $\frac{x-2}{x^2+9x+18}+\frac{3x+5}{x^2+11x+24}$

A) $\frac{4x^2+29x+14}{(x-3)(x-6)(x-8)}$ B) $\frac{4x^2+29x+14}{(x+3)(x+6)(x+8)}$ C) $4x+3$ D) $\frac{4x+3}{2x^2+20x+42}$

Objective: (0.5) Add/Subtract Rational Expressions (Different Denominators)

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289) $\frac{6x}{x+1} + \frac{7}{x-1} - \frac{12}{x^2-1}$

A) $\frac{6x}{x-1}$ B) $\frac{6x-5}{x-1}$ C) $\frac{x+1}{x-1}$ D) $\frac{6x-5}{x+1}$

Objective: (0.5) Add/Subtract Rational Expressions (Different Denominators)

290) $\frac{5}{x+2} + \frac{2}{x^2-2x+4} - \frac{60}{x^3+8}$

A) $-\frac{1}{x^2-4}$ B) $\frac{5x-18}{x^3-8}$ C) $\frac{7x-20}{x+2}$ D) $\frac{5x-18}{x^2-2x+4}$

Objective: (0.5) Add/Subtract Rational Expressions (Different Denominators)

291) $\frac{2x+10}{x+1} + \frac{x+2}{x+3} - \frac{7x+23}{(x+1)(x+3)}$

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

Objective: (0.5) Add/Subtract Rational Expressions (Different Denominators)

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

A) $\frac{25(b-6)}{(b+5)(b-5)}$ B) $\frac{25(b+6)}{b(b+5)(b-5)}$ C) $\frac{6b2-25b+150}{b(b+5)(b-5)}$ D) $\frac{-25(b-6)}{b(b+5)(b-5)}$

Objective: (0.5) Add/Subtract Rational Expressions (Different Denominators)

Perform the indicated operations and simplify the result. Leave the numerator and denominator in your answer in factored form.

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

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

Objective: (0.5) Simplify Complex Rational Expressions

294) $\frac{1-\frac{4}{x}}{1+\frac{4}{x}}$

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

Objective: (0.5) Simplify Complex Rational Expressions

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295) $\dfrac{\frac{9}{x}+1}{\frac{9}{x}-1}$

A) $\dfrac{9+x}{9-x}$ B) 9 C) $\dfrac{x^2}{x^2+9}$ D) x^2+9

Objective: (0.5) Simplify Complex Rational Expressions

296) $\dfrac{1-\frac{1}{x}}{3+\frac{1}{x}}$

A) $\dfrac{x+1}{3x-1}$ B) $\dfrac{3x+1}{x-1}$ C) $\dfrac{x-1}{3x+1}$ D) $\dfrac{x-1}{3x}$

Objective: (0.5) Simplify Complex Rational Expressions

297) $\dfrac{1-\frac{8}{x}}{x-\frac{64}{x}}$

A) $\dfrac{1}{x-8}$ B) $x-8$ C) $x+8$ D) $\dfrac{1}{x+8}$

Objective: (0.5) Simplify Complex Rational Expressions

298) $\dfrac{x-\frac{x}{x+3}}{x+2}$

A) $\dfrac{x}{x+2}$ B) $\dfrac{x}{x-3}$ C) $\dfrac{x}{x+3}$ D) $\dfrac{x^2}{x+3}$

Objective: (0.5) Simplify Complex Rational Expressions

299) $\dfrac{\frac{x+6}{x-6}+\frac{x-6}{x+6}}{\frac{x+6}{x-6}-\frac{x-6}{x+6}}$

A) $\dfrac{(x+6)^3}{24x(x+7)}$ B) $\dfrac{x^2+36}{12x}$ C) $\dfrac{(x+6)^2}{12x}$ D) 1

Objective: (0.5) Simplify Complex Rational Expressions

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300) $\dfrac{\dfrac{1}{x+4}+\dfrac{1}{x-4}}{\dfrac{1}{x^2-16}}$

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

Objective: (0.5) Simplify Complex Rational Expressions

301) $\dfrac{\dfrac{5}{x}+2}{\dfrac{25}{x^2}-4}$

A) $\dfrac{1}{5-2x}$ B) $\dfrac{x}{5-2x}$ C) $\dfrac{x}{5x-2}$ D) $\dfrac{1}{5x-2}$

Objective: (0.5) Simplify Complex Rational Expressions

302) $\dfrac{\dfrac{1}{x+a}+\dfrac{1}{x-a}}{\dfrac{x}{x-a}-\dfrac{a}{x+a}}$

A) $\dfrac{2x}{(x-a)(x+a)}, x \neq -a, x \neq a$ B) $\dfrac{x}{(x-a)(x+a)}, x \neq -a, x \neq a$

C) $\dfrac{x}{x^2+a^2}, x \neq -a, x \neq a$ D) $\dfrac{2x}{x^2+a^2}, x \neq -a, x \neq a$

Objective: (0.5) Simplify Complex Rational Expressions

Solve the problem.

303) A formula for the focal length of a lens is

$f = \dfrac{ab}{b+a}$

Calculate f (the focal length) for a = 13 cm and b = 11 cm. Round your answer to the nearest tenth, if necessary.

A) 6.5 cm B) 5.5 cm C) 7.0 cm D) 6.0 cm

Objective: (0.5) Solve Apps: Rational Expressions

304) If the average cost per unit C(x) to produce x units of plywood is given by $C(x) = \dfrac{300}{x+10}$, what is the unit cost for 40 units? Round your answer to the nearest hundredth, if necessary.

A) \$7.50 B) \$6.00 C) \$-2.50 D) \$0.75

Objective: (0.5) Solve Apps: Rational Expressions

305) Suppose the cost per ton, y, to build an oil platform of x thousand tons is approximated by $y = \dfrac{262{,}500}{x+525}$. What is the cost per ton for x = 50? Round your answer to the nearest hundredth, if necessary.

A) \$5250.00 B) \$4725.00 C) \$10.00 D) \$456.52

Objective: (0.5) Solve Apps: Rational Expressions

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306) In the following formula, y is the minimum number of hours of studying required to attain a test score of x:

$y = \frac{0.32x}{100.5 - x}$.

How many hours of study are needed to score 90? Round your answer to the nearest hundredth, if necessary.

A) 101.14 hr B) 27.40 hr C) 2.74 hr D) 7.85 hr

Objective: (0.5) Solve Apps: Rational Expressions

307) A 100- liter mixture of chlorine and water is 8% chlorine.

(i) Write a rational expression in x whose values give the percentage (in decimal form) of the mixture that is chlorine when x gallons of water are added to the mixture.

(ii) Find the percentage of chlorine in the mixture if 70 gallons of water are added to it. Round to the nearest percent, if necessary.

A) (i) $\frac{100 + 8}{x}$; (ii) 154%

B) (i) $\frac{8}{x}$; (ii) 11%

C) (i) $\frac{8}{100 - x}$; (ii) 8%

D) (i) $\frac{8}{100 + x}$; (ii) 5%

Objective: (0.5) Solve Apps: Rational Expressions

308) A company packages its powdered iced tea mix in containers in the shape of a cylinder. The top and bottom are made of a plastic product that costs 8 cents per square centimeter. The side of the container is made of a cheaper material that costs 1 cent per square centimeter. The height of the cylinder can be found by dividing its volume by the area of its base.

(i) If x is the radius of the base (in centimeters), write a rational expression in x whose values give the cost of each container, assuming that the capacity of the container is 60 cubic centimeters.

(ii) Find the cost of a container whose base is 4 centimeters in diameter, using 3.14 as an approximation of π. Round to the nearest cent, if necessary.

A) (i) $\frac{16\pi x^3 + 120}{x}$; (ii) $1667.68

B) (i) $\frac{16\pi x^3 + 120}{x}$; (ii) $16.68

C) (i) $\frac{16\pi x^2 + 120}{x}$; (ii) $2.61

D) (i) $\frac{16\pi x^2 + 120}{x}$; (ii) $260.96

Objective: (0.5) Solve Apps: Rational Expressions

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

309) $\sqrt{4}$

A) $\frac{1}{4}$ B) 2 C) 16 D) Not a real number

Objective: (0.6) Evaluate Root or State Root is Not Real

310) $-\sqrt{361}$

A) - 180 B) - 19 C) 19 D) Not a real number

Objective: (0.6) Evaluate Root or State Root is Not Real

311) $\sqrt{-100}$

A) 10,000 B) $\frac{10}{100}$ C) 10 D) Not a real number

Objective: (0.6) Evaluate Root or State Root is Not Real

312) $\sqrt[5]{32}$

A) - 2 B) 2 C) 32 D) Not a real number

Objective: (0.6) Evaluate Root or State Root is Not Real

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313) $\sqrt[4]{-16}$

A) 16 B) 2 C) - 2 D) Not a real number

Objective: (0.6) Evaluate Root or State Root is Not Real

314) $\sqrt[4]{\frac{256}{2401}}$

A) $\frac{252}{2397}$ B) $\frac{260}{2405}$ C) $\frac{256}{2401}$ D) $\frac{4}{7}$

Objective: (0.6) Evaluate Root or State Root is Not Real

315) $\sqrt{(-3)^2}$

A) 9 B) - 3 C) 3 D) Not a real number

Objective: (0.6) Evaluate Root or State Root is Not Real

316) $-\sqrt{(-2)^2}$

A) - 2 B) 2 C) - 16 D) Not a real number

Objective: (0.6) Evaluate Root or State Root is Not Real

317) $\sqrt[3]{(-2)^3}$

A) - 8 B) 2 C) - 2 D) Not a real number

Objective: (0.6) Evaluate Root or State Root is Not Real

318) $\sqrt[5]{(-2)^5}$

A) 2 B) 10 C) - 2 D) Not a real number

Objective: (0.6) Evaluate Root or State Root is Not Real

Simplify the expression using the product and quotient properties of square roots. Assume that any variables represent positive real numbers.

319) $\sqrt{98}$

A) $7\sqrt{2}$ B) $49\sqrt{2}$ C) 7 D) 9

Objective: (0.6) Simplify Expression Using Product and Quotient Properties

320) $-\sqrt[4]{64}$

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

Objective: (0.6) Simplify Expression Using Product and Quotient Properties

321) $\sqrt[3]{x^4}$

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

Objective: (0.6) Simplify Expression Using Product and Quotient Properties

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322) $\sqrt{175x^2}$

A) $5\sqrt{7}$ B) $5x^2\sqrt{7}$ C) $5\sqrt{7x^2}$ D) $5x\sqrt{7}$

Objective: (0.6) Simplify Expression Using Product and Quotient Properties

323) $\sqrt[4]{16a^4}$

A) $2a$ B) $2a^2$ C) $16a$ D) $2\sqrt{a}$

Objective: (0.6) Simplify Expression Using Product and Quotient Properties

324) $\sqrt[3]{24x^3}$

A) $2x$ B) $4x$ C) $3x\sqrt[3]{2}$ D) $2x\sqrt[3]{3}$

Objective: (0.6) Simplify Expression Using Product and Quotient Properties

325) $\sqrt[3]{\frac{256x^4}{4x}}$

A) $4x\sqrt[3]{4}$ B) $x\sqrt[3]{64}$ C) $4x$ D) $4x\sqrt[3]{x}$

Objective: (0.6) Simplify Expression Using Product and Quotient Properties

326) $\sqrt{5x}\sqrt{10x}$

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

Objective: (0.6) Simplify Expression Using Product and Quotient Properties

327) $\sqrt[5]{x^{17}y^9z^{13}}$

A) $x^3yz^2\sqrt[5]{x^2y^4z^3}$ B) $x^{15}y^5z^{10}\sqrt[5]{x^2y^4z^3}$ C) $x^3yz^2\sqrt[5]{y^4z^3}$ D) $xyz\sqrt[5]{x^2y^4z^3}$

Objective: (0.6) Simplify Expression Using Product and Quotient Properties

328) $\sqrt[4]{\sqrt{x}}$

A) $\sqrt[8]{x}$ B) $\sqrt{x}$ C) x^4 D) $\sqrt[6]{x}$

Objective: (0.6) Simplify Expression Using Product and Quotient Properties

Simplify the expression. Assume that all variables represent nonnegative real numbers.

329) $3\sqrt{5} - 9\sqrt{5}$

A) $-27\sqrt{10}$ B) $-6\sqrt{5}$ C) $-6\sqrt{10}$ D) $12\sqrt{5}$

Objective: (0.6) Add or Subtract Radical Expressions

330) $5\sqrt{48} + 5\sqrt{27} - 7\sqrt{147}$

A) $-8\sqrt{3}$ B) $5\sqrt{3}$ C) $-14\sqrt{3}$ D) $8\sqrt{3}$

Objective: (0.6) Add or Subtract Radical Expressions

331) $\sqrt{5x} - 3\sqrt{45x} - 2\sqrt{80x}$

A) $-16\sqrt{5x}$ B) $-5\sqrt{130x}$ C) $-5\sqrt{5x}$ D) $-16\sqrt{130x}$

Objective: (0.6) Add or Subtract Radical Expressions

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332) $7\sqrt{6} - 3\sqrt{150}$

A) $-8\sqrt{6}$ B) $8\sqrt{6}$ C) $4x\sqrt{6}$ D) $-22\sqrt{6}$

Objective: (0.6) Add or Subtract Radical Expressions

333) $\sqrt{2x^2} + 2\sqrt{18x^2} - 4\sqrt{18x^2}$

A) $-5x\sqrt{38}$ B) $-2x\sqrt{2}$ C) $-5x\sqrt{2}$ D) $-2x\sqrt{38}$

Objective: (0.6) Add or Subtract Radical Expressions

334) $5\sqrt[3]{64x} + 5\sqrt[3]{27x}$

A) $35x$ B) $5\sqrt[3]{91x}$ C) $35\sqrt[3]{x}$ D) $7\sqrt[3]{x}$

Objective: (0.6) Add or Subtract Radical Expressions

335) $\sqrt[3]{16x} - 4\sqrt[3]{2x} - 2\sqrt[3]{54x}$

A) $\sqrt[3]{16x} - 10\sqrt[3]{2x}$ B) $9\sqrt[3]{2x}$ C) $-8\sqrt[3]{2x}$ D) $-8\sqrt[3]{4x}$

Objective: (0.6) Add or Subtract Radical Expressions

336) $\sqrt{49x^2} + \sqrt{432xy} + \sqrt{81x^2} + \sqrt{108xy}$

A) $18\sqrt{3xy} + 16x$ B) $\sqrt{432xy} + \sqrt{108} + 16x$

C) $18\sqrt{3xy} + \sqrt{49x} + \sqrt{81x}$ D) $180\sqrt{3xy} + 16x$

Objective: (0.6) Add or Subtract Radical Expressions

337) $y\sqrt{2xy^3} + \sqrt{162x^5y} - 6y\sqrt{2x^3y}$

A) $(3x - y)^2\sqrt{2xy}$ B) $(2x - y)(2x + y)\sqrt{3xy}$

C) $(3x - y)(3x + y)\sqrt{2xy}$ D) $(2x - y)^2\sqrt{3xy}$

Objective: (0.6) Add or Subtract Radical Expressions

338) $4\sqrt{2xy^3} - \sqrt{18x^5y} + x\sqrt{8xy}$

A) $\sqrt{3xy}(-2x^2 + 3x + 6y)$ B) $\sqrt{2xy}(3x^2 - 2x + 4y)$

C) $\sqrt{3xy}(2x^2 - 3x + 6y)$ D) $\sqrt{2xy}(-3x^2 + 2x + 4y)$

Objective: (0.6) Add or Subtract Radical Expressions

Rationalize the denominator.

339) $\dfrac{14}{\sqrt{14}}$

A) $14\sqrt{14}$ B) 1 C) $\sqrt{14}$ D) 14

Objective: (0.6) Rationalize the Denominator

340) $\sqrt{\dfrac{7}{13}}$

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

Objective: (0.6) Rationalize the Denominator

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341) $\frac{7}{9 - \sqrt{7}}$

A) $\frac{63 - 7\sqrt{7}}{74}$ B) $\frac{63 + 7\sqrt{7}}{2}$ C) $\frac{63 + 7\sqrt{7}}{74}$ D) $\frac{7}{9} - \frac{7}{\sqrt{7}}$

Objective: (0.6) Rationalize the Denominator

342) $\frac{\sqrt{3}}{\sqrt{17} + 3}$

A) $\frac{\sqrt{51} - 3\sqrt{3}}{20}$ B) $\frac{3\sqrt{51} + 17\sqrt{51}}{3}$ C) $\frac{\sqrt{51} - 3\sqrt{3}}{8}$ D) $\frac{\sqrt{51} + 3\sqrt{3}}{8}$

Objective: (0.6) Rationalize the Denominator

343) $\frac{5}{\sqrt{2} + \sqrt{7}}$

A) $\sqrt{7} + \sqrt{2}$ B) $\sqrt{5}$ C) $\sqrt{7} - \sqrt{2}$ D) $\sqrt{2} - \sqrt{7}$

Objective: (0.6) Rationalize the Denominator

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

A) - 1 B) $\frac{97 - 20\sqrt{3}}{103}$ C) $\frac{103 + 20\sqrt{3}}{97}$ D) $\frac{103 - 20\sqrt{3}}{97}$

Objective: (0.6) Rationalize the Denominator

345) $\frac{\sqrt{3} - \sqrt{4}}{\sqrt{3} + \sqrt{4}}$

A) $-7 - 2\sqrt{12}$ B) $7 - 2\sqrt{12}$ C) $7 + 2\sqrt{12}$ D) $2\sqrt{12} - 7$

Objective: (0.6) Rationalize the Denominator

346) $\frac{1}{\sqrt{2} + 7x}$

A) $\frac{\sqrt{2} + 7x}{2 + 49x^2}$ B) $\frac{7x\sqrt{2}}{2 - 49x^2}$ C) $\frac{\sqrt{2} - 7x}{2 - 49x^2}$ D) $\frac{7x\sqrt{2}}{2 + 49x^2}$

Objective: (0.6) Rationalize the Denominator

347) $\frac{4}{\sqrt{x + h} - \sqrt{x}}$

A) $\frac{4(\sqrt{x + h} + \sqrt{x})}{h}$ B) $\frac{4(\sqrt{x + h} - \sqrt{x})}{h}$ C) $\frac{4\sqrt{h}}{h}$ D) $\frac{4\sqrt{x + h} + \sqrt{x}}{h}$

Objective: (0.6) Rationalize the Denominator

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348) $\frac{a\sqrt{x} - 5}{a\sqrt{x} + 5}$

A) $\frac{a^2x - 10a\sqrt{x} + 25}{a^2x + 25}$ B) $\frac{a^2x + 10a\sqrt{x} - 25}{a^2x - 25}$ C) $\frac{a^2x - 10a\sqrt{x} + 25}{a^2x - 25}$ D) $\frac{a^2x - 10a\sqrt{x} - 25}{a^2x + 25}$

Objective: (0.6) Rationalize the Denominator

Evaluate the expression without using a calculator.

349) $144^{1/2}$

A) 24 B) 6 C) 12 D) 48

Objective: (0.6) Evaluate Expression with Rational Exponent

350) $81^{1/4}$

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

Objective: (0.6) Evaluate Expression with Rational Exponent

351) $(-243)^{1/5}$

A) - 27 B) 81 C) 243 D) - 3

Objective: (0.6) Evaluate Expression with Rational Exponent

352) $(-1)^{2/5}$

A) $-\frac{2}{5}$ B) - 1 C) 0 D) 1

Objective: (0.6) Evaluate Expression with Rational Exponent

353) $4^{-1/2}$

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

Objective: (0.6) Evaluate Expression with Rational Exponent

354) $64^{4/3}$

A) 16,384 B) 256 C) 1024 D) 4096

Objective: (0.6) Evaluate Expression with Rational Exponent

355) $64^{-3/2}$

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

Objective: (0.6) Evaluate Expression with Rational Exponent

356) $-243^{1/5}$

A) 243 B) - 3 C) - 27 D) 81

Objective: (0.6) Evaluate Expression with Rational Exponent

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357) $\left(\frac{25}{4}\right)^{1/2}$

A) $\frac{25}{2}$ B) $\frac{5}{4}$ C) $\frac{4}{3}$ D) $\frac{5}{2}$

Objective: (0.6) Evaluate Expression with Rational Exponent

358) $\left(-\frac{1}{1024}\right)^{-1/5}$

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

C) 1,125,899,906,842,624 D) - 4

Objective: (0.6) Evaluate Expression with Rational Exponent

Simplify the expression, leaving your answer with only positive exponents. Assume that all variables represent positive numbers.

359) $x^{1/5} \cdot x^{4/5}$

A) $x^{4/25}$ B) x C) $x^{4/5}$ D) $\frac{1}{x}$

Objective: (0.6) Use Properties of Rational Exponents

360) $x^{-2/5} \cdot x^{3/5}$

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

Objective: (0.6) Use Properties of Rational Exponents

361) $(x^5)^{9/5}$

A) x^{10} B) x^3 C) x^9 D) x^5

Objective: (0.6) Use Properties of Rational Exponents

362) $(x^4y^6)^{-1/2}$

A) $\frac{1}{2x^4y^6}$ B) $\frac{1}{x^2y^3}$ C) $\frac{1}{x^3y^2}$ D) $\frac{1}{x^8y^{12}}$

Objective: (0.6) Use Properties of Rational Exponents

363) $(27x^6y^6)^{1/3}$

A) $3x^2y$ B) $3x^6y^2$ C) $3x^2y^2$ D) x^2y^2

Objective: (0.6) Use Properties of Rational Exponents

364) $\frac{x^{9/8}}{x^{5/8}}$

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

Objective: (0.6) Use Properties of Rational Exponents

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365) $\frac{2x^{1/7}}{6x^{1/3}}$

A) $\frac{1}{3x^{4/21}}$ B) $\frac{x^{4/21}}{3}$ C) $\frac{1}{3x^{1/21}}$ D) $\frac{x^{1/4}}{3}$

Objective: (0.6) Use Properties of Rational Exponents

366) $\frac{36x^{1/4}}{4x^{2/3}}$

A) $32x^{-1/12}$ B) $9x^{-5/12}$ C) $9x^{-5/8}$ D) $9x^{-1/12}$

Objective: (0.6) Use Properties of Rational Exponents

367) $\left(\frac{x^8}{625}\right)^{1/4}$

A) $\frac{x^2}{5}$ B) $5x^2$ C) $\frac{x^2}{25}$ D) $\frac{x^{1/2}}{5}$

Objective: (0.6) Use Properties of Rational Exponents

368) $\left(\frac{x^{-6}}{y^{-8}}\right)^{-1/2}$

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

Objective: (0.6) Use Properties of Rational Exponents

Convert the radical expression to its rational exponent form and then simplify. Assume that all variables represent positive numbers.

369) $\sqrt[3]{5^9}$

A) 125 B) 25 C) 5^3 D) 625

Objective: (0.6) Simplify Radicals Using Rational Exponents

370) $\sqrt[4]{81^5}$

A) 19,683 B) 2187 C) 6561 D) 243

Objective: (0.6) Simplify Radicals Using Rational Exponents

371) $\sqrt[12]{81x^4}$

A) $\frac{1}{27x}$ B) $3^{1/4}x^{1/4}$ C) $3^{1/3}x^{1/3}$ D) $3^{1/12}x^{1/12}$

Objective: (0.6) Simplify Radicals Using Rational Exponents

372) $\sqrt[30]{x^{36}y^{25}}$

A) $x^{5/6}y^{6/5}$ B) $x^{6/5}y^{5/6}$ C) $x^{5/6}y^{5/6}$ D) $x^{6/5}y^{6/5}$

Objective: (0.6) Simplify Radicals Using Rational Exponents

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373) $\sqrt[6]{x^4}$

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

Objective: (0.6) Simplify Radicals Using Rational Exponents

374) $\sqrt{13}\sqrt[5]{13}$

A) $13^{1/10}$ B) $13^{7/10}$ C) $\frac{1}{13^{10}}$ D) 13^6

Objective: (0.6) Simplify Radicals Using Rational Exponents

375) $\sqrt[6]{x^5} \cdot \sqrt[3]{x^2}$

A) $x^{7/9}$ B) $x^{18/10}$ C) $x^{27/18}$ D) $x^{10/18}$

Objective: (0.6) Simplify Radicals Using Rational Exponents

376) $\sqrt[3]{\sqrt{7}}$

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

Objective: (0.6) Simplify Radicals Using Rational Exponents

377) $\sqrt[5]{\sqrt[4]{11}}$

A) 11^{20} B) $11^{1/20}$ C) 11^9 D) $11^{1/9}$

Objective: (0.6) Simplify Radicals Using Rational Exponents

378) $\sqrt[4]{\sqrt[3]{x}}$

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

Objective: (0.6) Simplify Radicals Using Rational Exponents

Convert the given product to a single radical. Assume that all variables represent positive numbers.

379) $\sqrt{3} \cdot \sqrt[3]{4}$

A) $\sqrt[6]{108}$ B) $\sqrt[6]{432}$ C) $\sqrt[6]{144}$ D) $\sqrt[6]{12}$

Objective: (0.6) Multiply Radicals with Different Indexes

380) $\sqrt[3]{9}\sqrt{5}$

A) $\sqrt[6]{10{,}125}$ B) $\sqrt[5]{45}$ C) $\sqrt[6]{45}$ D) $\sqrt[5]{11}$

Objective: (0.6) Multiply Radicals with Different Indexes

381) $\sqrt[4]{6} \cdot \sqrt[5]{4}$

A) $\sqrt[20]{24}$ B) $\sqrt[20]{1{,}990{,}656}$ C) $\sqrt[20]{8032}$ D) $\sqrt[9]{1{,}990{,}656}$

Objective: (0.6) Multiply Radicals with Different Indexes

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382) $\sqrt{5} \cdot \sqrt[5]{4}$

A) $\sqrt[10]{10{,}000}$ B) $\sqrt[10]{50{,}000}$ C) $\sqrt[7]{50{,}000}$ D) $\sqrt[10]{20}$

Objective: (0.6) Multiply Radicals with Different Indexes

383) $\sqrt[4]{x^2} \cdot \sqrt[5]{x^3}$

A) $x\sqrt[20]{x}$ B) $x\sqrt[10]{x}$ C) $\sqrt[10]{x}$ D) $\sqrt[20]{x^5}$

Objective: (0.6) Multiply Radicals with Different Indexes

384) $\sqrt{x^3y}\ \sqrt[3]{xy}$

A) $x\sqrt[6]{x^5y^5}$ B) $\sqrt[6]{x^5y^5}$ C) $\sqrt[6]{x^3y^2}$ D) $\sqrt[5]{x^3y^5}$

Objective: (0.6) Multiply Radicals with Different Indexes

385) $\sqrt[3]{a^2b^3}\ \sqrt[7]{a^3b^2}$

A) $\sqrt[10]{a^6b^6}$ B) $\sqrt[21]{a^5b^5}$ C) $ab\sqrt[21]{a^2b^6}$ D) $ab\sqrt[10]{a^{17}b^{24}}$

Objective: (0.6) Multiply Radicals with Different Indexes

386) $\sqrt[5]{ab} \cdot \sqrt[3]{a^2b^2}$

A) $\sqrt[15]{a^{13}b^{13}}$ B) $ab\sqrt[5]{a^2b^2}$ C) $\sqrt[15]{a^3b^3}$ D) $ab\sqrt[30]{a^{15}b^{15}}$

Objective: (0.6) Multiply Radicals with Different Indexes

Solve the problem.

387) The length of the diagonal of a rectangle is given by $D = \sqrt{L^2 + W^2}$ where L and W are the length and width of the rectangle. What is the length of the diagonal, D, of a rectangle that is 89 inches long and 17 inches wide? Round your answer to the nearest tenth of an inch, if necessary.

A) 38.9 in. B) 87.4 in. C) 90.6 in. D) 10.3 in.

Objective: (0.6) Solve Apps: Rational Exponents and Radicals

388) The length of the diagonal of a box is given by $D = \sqrt{L^2 + W^2 + H^2}$ where L, W, and H are the length, width, and height of the box. Find the length of the diagonal, D, of a box that is 3 ft long, 2 ft high, and 3 ft wide. Give the exact value.

A) $3\sqrt{2}$ ft B) 8 ft C) 18 ft D) $\sqrt{22}$ ft

Objective: (0.6) Solve Apps: Rational Exponents and Radicals

389) The radius of a sphere is given by the formula $r = \sqrt{\frac{S}{4\pi}}$, where S is the surface area. If the surface area is 93 square inches, what is the radius? Use 3.14 for π, and round your answer to the nearest tenth of an inch.

A) 2.7 in. B) 0.4 in. C) 4.8 in. D) 8.5 in.

Objective: (0.6) Solve Apps: Rational Exponents and Radicals

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390) The radius of a right circular cone is given by the formula $r = \sqrt{\frac{3V}{\pi h}}$, where V is the volume and h is the height. If the volume is 598 cubic inches and the height is 20 inches, what is the radius? Use 3.14 for π, and round your answer to the nearest tenth of an inch.

A) 3.1 in. B) 5.3 in. C) 5.6 in. D) 0.2 in.

Objective: (0.6) Solve Apps: Rational Exponents and Radicals

391) A simple exercise machine can be constructed by mounting a stiff spring securely to a wall and attaching a "T" handle to the free end of the spring. The arms can be exercised simply by pulling the "T" handle towards the torso. For a particular spring, the stretch distance is related to the work exerted by the equation

$$x = \sqrt{\frac{2W}{85000}},$$

where W is the work exerted in joules and x is the stretch distance in cm. How far will you stretch the spring if you exert 680 joules of work? Round your answer to three decimal places.

A) 0.089 cm B) 0.126 cm C) 0.016 cm D) 0.135 cm

Objective: (0.6) Solve Apps: Rational Exponents and Radicals

392) A formula for calculating the distance, d, one can see from an airplane to the horizon on a clear day is $d = 1.22x^{1/2}$, where x is the altitude of the plane in feet and d is given in miles. How far can one see in a plane flying at 23,000 feet? Round your answer to the nearest tenth mile, if necessary.

A) 167.5 mi B) 185.0 mi C) 14,030 mi D) 1403 mi

Objective: (0.6) Solve Apps: Rational Exponents and Radicals

393) The cost of manufacturing clocks is given by $c = 25(n + 81)^{1/2}$, where c is the cost in dollars and n is the number produced. What is the cost when no clocks are produced?

A) \$2025 B) \$225 C) \$25 D) \$45

Objective: (0.6) Solve Apps: Rational Exponents and Radicals

394) In an economics study, three quantities m, p, and q have been found to be related by the equation $m = p^{1/2} \cdot q^{1/2}$. Find m, if $p = 36$ and $q = 16$.

A) 24 B) 96 C) 576 D) 10

Objective: (0.6) Solve Apps: Rational Exponents and Radicals

395) A manufacturer's cost is given by $C = 500n^{1/3} + 1500$, where C is the cost in dollars and n is the number of parts produced. Find the cost when 125 parts are produced.

A) \$7090 B) \$100 C) \$2750 D) \$4000

Objective: (0.6) Solve Apps: Rational Exponents and Radicals

396) When determining appropriate doses of medication, it is sometimes important to estimate the body surface area (BSA) of a patient. This surface area (in m^2) can be approximated using the Mosteller formula

$$BSA = \left(\frac{h \cdot w}{3600}\right)^{1/2},$$

where h is the patient's height in centimeters and w is the weight in kilograms. Determine the BSA for a patient with height 164 cm and weight 46 kg. Round your answer to two decimal places.

A) 1.45 m^2 B) 0.02 m^2 C) 2.10 m^2 D) 4.39 m^2

Objective: (0.6) Solve Apps: Rational Exponents and Radicals

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Answer Key
Testname: RATTI_RTA5E_CHP_TEST_ITEM_FILE

1) C
2) D
3) A
4) B
5) A
6) A
7) B
8) C
9) D
10) A
11) C
12) D
13) D
14) C
15) A
16) D
17) D
18) D
19) A
20) D
21) B
22) C
23) B
24) A
25) C
26) B
27) C
28) B
29) C
30) D
31) B
32) B
33) C
34) A
35) A
36) C
37) B
38) A
39) A
40) D
41) C
42) A
43) C
44) A
45) D
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141) C
142) D
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146) A
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148) C
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186) B
187) C
188) B
189) C
190) B
191) B
192) D
193) C
194) A
195) B
196) A
197) A
198) C
199) B
200) C

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Answer Key
Testname: RATTI_RTA5E_CHP_TEST_ITEM_FILE

201) D
202) D
203) D
204) A
205) A
206) D
207) D
208) C
209) D
210) B
211) B
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336) A
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381) B
382) B
383) B
384) A
385) C
386) A
387) C
388) D
389) A
390) B
391) B
392) B
393) B
394) A
395) D
396) A

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