Sample Test 1

Name_____

In the real test you will have 10 questions and the following rules:

You have 50 minutes to complete the test below. The usage of books or notes, or communication with other students is not allowed. Ask me if you have questions.

This is a multiple choice test. You do not have to justify your answer. If , however, you are not sure that your selection is correct, put a star (*) in front of the question number, and include your calculations on an attached sheet. **I will look at an attached calculation only if I see a star in front of the question number.**
–If you mark an incorrect answer but your calculations contain only minor mistakes, you will get up to 75% credit for the problem.
–Beware: if you instruct me to look at a severely incorrect calculation, you will lose at least 50% of the credit, **even if by chance you mark the correct answer.** *(No credit is given for an incorrect answer and totally incorrect calculations.)*
You get full credit if you mark the correct answer, and mark no star, or if you mark the correct answer, express doubt by marking a star, but I find your calculations perfectly correct.

Express the number in scientific notation.

1) 84.964

   A) 8.4964×10^{-1} B) 8.4964×10^{2} C) 8.4964×10^{1} D) 8.4964×10^{-2}

Factor by grouping.

2) $12a^3 - 8a^2b + 15ab^2 - 10b^3$

   A) $(4a^2 + 5b)(3a - 2b)$ B) $(4a^2 - 5b^2)(3a + 2b)$ C) $(4a^2 + 5b^2)(3a - 2b)$ D) $(12a^2 + 5b^2)(a - 2b)$

Multiply. Simplify if possible.

3) $\dfrac{k^2 + 7k + 10}{k^2 + 13k + 40} \cdot \dfrac{k^2 + 8k}{k^2 + 7k + 10}$

   A) $\dfrac{1}{k + 5}$ B) $\dfrac{k^2 + 8k}{k + 5}$ C) $\dfrac{k}{k^2 + 13k + 40}$ D) $\dfrac{k}{k + 5}$

Divide. Simplify if possible.

4) $\dfrac{z^2 + 11z + 18}{z^2 + 12z + 27} \div \dfrac{z^2 + 2z}{z^2 - 2z - 15}$

   A) $z - 5$ B) $\dfrac{z}{z^2 + 12z + 27}$ C) $\dfrac{z - 5}{z^2 + 3z}$ D) $\dfrac{z - 5}{z}$

Perform the indicated operation and simplify.

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

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

Use rational exponents to write as a single radical expression.

6) $\sqrt[5]{5} \cdot \sqrt{2}$

   A) $\sqrt[10]{800}$ B) $\sqrt[10]{160}$ C) $\sqrt[10]{10}$ D) $\sqrt[5]{10}$

Use rational exponents to simplify the radical. Assume that all variables represent positive numbers.

7) $\sqrt[10]{x^6 y^4}$

    A) $\sqrt[5]{xy^2}$ B) $\sqrt[5]{x^3 y^2}$ C) $\sqrt{x^3 y^2}$ D) $\sqrt[5]{x^3 y}$

Solve the equation.

8) $2(y + 5) = 3(y - 6)$

    A) 8   B) 28   C) –8   D) –28

9) $5x - 6 + 7x + 8 = 5x + 7x - 1$

    A) 224   B) 0   C) All real numbers   D) No solution

10) $7(x + 4) = (7x + 28)$

    A) 56   B) All real numbers   C) 0   D) No solution

Solve the problem.

11) Using a phone card to make a long distance call costs a flat fee of $0.31 plus $0.14 per minute starting with the first minute. After writing an equation for this situation, how many minutes did a phone call last in which the total charge was $2.97?

    A) 14 minutes   B) 26 minutes   C) 19 minutes   D) 31 minutes

12) Don James wants to invest $70,000 to earn $7140 per year. He can invest in B–rated bonds paying 15% per year or in a Certificate of Deposit (CD) paying 7% per year. How much money should be invested in each to realize exactly $7140 in interest per year?

    A) $41,000 in B–rated bonds and $29,000 in a CD   B) $29,000 in B–rated bonds and $41,000 in a CD

    C) $42,000 in B–rated bonds and $28,000 in a CD   D) $28,000 in B–rated bonds and $42,000 in a CD

13) A rectangular carpet has a perimeter of 220 inches. The length of the carpet is 70 inches more than the width. What are the dimensions of the carpet?

    A) 90 by 110 inches   B) 90 by 20 inches   C) 65 by 85 inches   D) 100 by 110 inches

Solve the equation.

14) $2m^2 - 3m = 0$

    A) $\left\{ -\dfrac{3}{2}, 0 \right\}$ B) $\left\{ \dfrac{3}{2}, -\dfrac{3}{2} \right\}$ C) $\{0\}$ D) $\left\{ \dfrac{3}{2}, 0 \right\}$

Solve by completing the square.

15) $49b^2 + 42b + 5 = 0$

    A) $\left\{ -\dfrac{1}{7}, -\dfrac{5}{7} \right\}$ B) $\left\{ \dfrac{1}{7}, \dfrac{5}{7} \right\}$ C) $\left\{ -\dfrac{5}{49}, \dfrac{10}{49} \right\}$ D) $\left\{ -\dfrac{1}{49}, -\dfrac{5}{49} \right\}$

Use the quadratic formula to solve the equation.

16) $5r^2 + 22r = -18$

    A) $\left\{ \dfrac{-22 \pm \sqrt{31}}{5} \right\}$ B) $\left\{ \dfrac{-11 \pm \sqrt{31}}{10} \right\}$ C) $\left\{ \dfrac{-11 \pm \sqrt{31}}{5} \right\}$ D) $\left\{ \dfrac{-11 \pm \sqrt{211}}{5} \right\}$

Use the discriminant to determine whether the following equation has solutions that are two different rational solutions; two different irrational solutions; exactly one rational solution; or two different imaginary solutions.

17) $s^2 + 2s - 8 = 0$

    A) Exactly one rational solution   B) Two different irrational solutions

    C) Two different rational solutions   D) Two different imaginary solutions

Solve the equation.

18) $(-7p + 7)^2 = -8(-7p + 7) - 15$

    A) $\{-3,-5\}$ B) $\{-\frac{4}{7}, -\frac{2}{7}\}$ C) $\{1\frac{3}{7}, 1\frac{5}{7}\}$ D) $\{-1\frac{3}{7}, -1\frac{5}{7}\}$

19) $2 + \dfrac{5}{5z - 1} = \dfrac{-2}{(5z - 1)^2}$

    A) $\{-\frac{1}{5}, \frac{1}{10}\}$ B) $\{-\frac{1}{5}, -\frac{1}{10}\}$ C) $\{-2, -\frac{1}{2}\}$ D) $\{-\frac{1}{5}, 0\}$

1) C
2) C
3) D
4) D
5) B
6) A
7) B
8) B
9) D
10) B
11) C
12) D
13) B
14) D
15) A
16) C
17) C
18) C
19) A