KYOTE College Algebra Practice Exam 4

1. Simplify. \((\frac{7x}{x-7})^{-2}\)
   - A) \(\frac{1}{49} x^6\)
   - B) \(\frac{1}{49} x^{10}\)
   - C) \(\frac{1}{49} x^5\)
   - D) \(7 x^6\)
   - E) \(\frac{7}{x^{10}}\)

2. One solution of \(2 x^2 - x - 4 = 0\) is
   - A) \(\frac{1 + \sqrt{33}}{2}\)
   - B) \(\frac{1 - \sqrt{31}}{4}\)
   - C) \(\frac{1 + \sqrt{33}}{4}\)
   - D) \(-\frac{1 + \sqrt{33}}{4}\)
   - E) \(-\frac{1}{2} - \sqrt{31}\)

3. The line parallel to \(4x + y = 3\) and passing through \((3, 2)\) has equation
   - A) \(y = 4x - 10\)
   - B) \(-4x + 14\)
   - C) \(4x - 5\)
   - D) \(-4x - 10\)
   - E) \(-4x + 11\)

4. Find \(\frac{x^2}{x-y}\) when \(x = -4\) and \(y = -3\)
   - A) \(\frac{16}{7}\)
   - B) 16
   - C) \(-\frac{16}{7}\)
   - D) \(-16\)
   - E) \(-\frac{4}{3}\)

5. If \(x\) and \(y\) are positive numbers, then \(\sqrt{12(x^5y^4)^3}\) =?
   - A) \(2x^7y^6\sqrt{3} x\)
   - B) \(\pm 2x^7y^6\sqrt{3} x\)
   - C) \(2\sqrt{3} x^5 y^4\)
   - D) \(\pm 6x^5 y^4\sqrt{x^5 y^4}\)
   - E) \(6x^5 y^4\sqrt{x^5 y^4}\)

6. Solve \(3x = 7y(1 - 2x)\) for \(x\).
   - A) \(\frac{7}{3} y + \frac{-2}{3} x\)
   - B) \(\frac{7y}{3 + 14y}\)
   - C) \(\frac{7}{5} y\)
   - D) \(\frac{7y}{3 - 14y}\)
   - E) \(3 + \frac{14}{3} xy\)
7. Which of the following equations has the same solution as \(-10x + 2 = -2x + 3\)?

- A) \(-12x = -5\)
- B) \(-12x = 1\)
- C) \(-8x = -5\)
- D) \(-8x = -1\)
- E) \(-8x = 1\)

8. What is the \(y\)-coordinate of the point where the lines \(-x + 7y - 15 = 0\) and \(x = -3\) intersect?

- A) \(\frac{12}{7}\)
- B) \(\frac{18}{7}\)
- C) \(-\frac{18}{7}\)
- D) \(\frac{7}{12}\)
- E) \(-\frac{12}{7}\)

9. A rectangle has length 25 inches and width 20 inches. What is the length of a diagonal from one corner to the opposite corner, rounded to the nearest inch?

- A) 34
- B) 33
- C) 32
- D) 35
- E) 36

10. Which of the following is the equation of the parabola whose graph is shown below?

- A) \(y = (x - 4)(x + 2) - 16\)
- B) \(y = 2(x + 4)(x - 2)\)
- C) \(y = (x - 4)(x + 2)\)
- D) \(y = 2(x - 4)(x + 2)\)
- E) \(y = (x + 4)(x - 2) - 16\)

11. Simplify. \(-9(x - 8y + z) - (x - y - 4z + 6)\)

- A) \(-10x + 73y - 5z + 6\)
- B) \(-10x + 73y - 5z - 6\)
- C) \(-8x + 73y - 5z + 6\)
- D) \(-8x + 71y - 5z - 6\)
- E) \(-8x + 71y + 13z - 6\)

12. If \(f(x) = \sqrt{2x - 3}\), and \(f(a) = 5\), then \(a =?\)

- A) 11
- B) 4
- C) 25
- D) 14
- E) 1
13. Expand and simplify. \(x^2(x^3 - 6)^2\)

- A) \(x^8 - 6x^5 + 36x^2\)
- B) \(x^{10} - 12x^7 + 36x^4\)
- C) \(x^{10} + 36x^4\)
- D) \(x^8 - 12x^5 + 36x^2\)
- E) \(x^8 + 36x^2\)

14. Simplify. \(\frac{20x^2y^6 - 5xy^2}{5xy^2}\)

- A) \(20x^2y^6 - 1\)
- B) \(4xy^4 - 1\)
- C) \(4xy^3 - 5xy^2\)
- D) \(20x^2y^6\)
- E) \(4xy^3 - 1\)

15. Simplify. \((-2x^4)^3(-3x^2)^2\)

- A) \(18x^{16}\)
- B) \(-72x^{11}\)
- C) \(-72x^{16}\)
- D) \(18x^{11}\)
- E) \(72x^{16}\)

16. Simplify. \(\frac{5}{z^3w^2} - \frac{2}{zw}\)

- A) \(\frac{5w^5 - 2z^2}{z^3w^7}\)
- B) \(\frac{5w^5 - 2z^2}{z^4w^9}\)
- C) \(\frac{3}{z^3w^7}\)
- D) \(\frac{3}{z^4w^9}\)
- E) \(\frac{3}{z^3w^2 - zw^7}\)

17. A rectangular field is enclosed by 200 feet of fencing. If the length of the field is 8 feet more than its width, what is its length, in feet?

- A) 46
- B) 54
- C) 96
- D) 50
- E) 104
18. One solution of $|11x + 7| = 3$ is

- A) $-10/11$
- B) $-7/10$
- C) $-11/10$
- D) $11/10$
- E) $10/11$

19. Solve $-5x < x + 3$ and express the solution in interval notation.

- A) $(-\infty, -\frac{4}{3})$
- B) $(-\infty, -\frac{1}{2})$
- C) $(\frac{-3}{4}, \infty)$
- D) $(-2, \infty)$
- E) $(\frac{-1}{2}, \infty)$

20. What is $F$ in the formula $L = \frac{7}{5}F - 3$ when $L = 4$?

- A) 5
- B) $\frac{7}{5}$
- C) $\frac{49}{5}$
- D) $\frac{41}{7}$
- E) $\frac{5}{7}$

21. One of the factors of $3x^2 + 10x - 8$ is

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

22. If a line has slope $-2$ and passes through the point $(2, 3)$, what is the $y$-coordinate of the point on the line whose $x$-coordinate is 4?

- A) 0
- B) $-4$
- C) $-2$
- D) $-1$
- E) $-3$

23. A boy has $x$ quarters, twice as many dimes as quarters, and 8 more nickels than quarters in his piggy bank. How much, in cents, is in his bank?

- A) $4x + 8$
- B) $70x + 8$
- C) $70x + 40$
- D) $50x + 8$
- E) $50x + 40$
24. Which of the following functions has a domain set corresponding to bold portion of the number line below?

- A) \( \sqrt{5x - 3} \)
- B) \( \sqrt{5x + 3} \)
- C) \( \sqrt{5 - 3x} \)
- D) \( \sqrt{3 - 5x} \)
- E) \( \sqrt{3x + 5} \)

![Number Line]

25. Find \( \sqrt{\frac{x^3}{y^2}} \) when \( x = 2 \) and \( y = -7 \).

- A) \( \frac{2\sqrt{2}}{7} \)
- B) \( \frac{4}{49} \)
- C) \( \frac{2\sqrt{2}}{49} \)
- D) \( -\frac{2\sqrt{2}}{7} \)
- E) \( \pm \frac{2\sqrt{2}}{7} \)
Key: KYOTE12CART4

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Standards Table

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Description of Standards

1. **KYOTECA.01.3**: Evaluate algebraic expressions at specified values of their variables using signed numbers, rational exponents, order of operations and parentheses.

2. **KYOTECA.02.3**: Add, subtract and multiply polynomials.

3. **KYOTECA.03.3**: Simplify algebraic expressions involving integer exponents.

4. **KYOTECA.04.3**: Simplify algebraic expressions involving square roots and cube roots.

5. **KYOTECA.05.3**: Factor a polynomial in one or more variables by factoring out its greatest common factor. Factor a trinomial. Factor the difference of squares.

6. **KYOTECA.06.3**: Add, subtract, multiply and divide simple rational expressions.

7. **KYOTECA.07.3**: Simplify a rational expression.

8. **KYOTECA.08.3**: Solve a linear equation.

9. **KYOTECA.09.3**: Solve a multivariable equation for one of its variables.

10. **KYOTECA.10.3**: Solve a linear inequality in one variable.
11. KYOTECA.11.3: Solve a quadratic equation.

12. KYOTECA.12.3: Solve an equation involving a radical, a rational or an absolute value expression.

13. KYOTECA.13.3: Solve a system of two linear equations in two variables.

14. KYOTECA.14.3: Solve problems that can be modeled using a linear or quadratic equation or expression.

15. KYOTECA.15.3: Solve geometry problems using the Pythagorean theorem and the properties of similar triangles.

16. KYOTECA.16.3: Understand and apply the relationship between the properties of a graph of a line and its equation.

17. KYOTECA.17.3: Find the intercepts and the graph of a parabola given its equation. Find an equation of a parabola given its graph.

18. KYOTECA.18.3: Evaluate a function at a number in its domain. Find the domain of a rational function or the square root of a linear function.