

KYOTE College Algebra Practice Exam 3

1. Simplify. $x^2(x^3 - 7x) - (7x - 9x^3)$

- A) $x^5 + 2x^3 - 7x$ B) $x^6 + 2x^3 - 7x$ C) $x^5 - 9x^3 - 14x$
 D) $x^5 - 16x^3 - 7x$ E) $x^6 + 9x^3 - 14x$

2. A man invests 10,000 dollars in two accounts, the first yielding 4 percent annual interest and the second, 5 percent. If x dollars is invested in the first account, how much annual interest does the man earn on his investment?

- A) 900.0 B) $0.09x$ C) $9x$
 D) $-x + 50000$ E) $-0.01x + 500.0$

3. What is the set of all values of x for which the expression $\frac{x+6}{x^2-2x-8}$ is not defined?

- A) $\{-6, -4, 2\}$ B) $\{-6, -2, 4\}$ C) $\{-4, 2\}$
 D) $\{-2, 4\}$ E) $\{-6\}$

4. If x and y satisfy both $9x + 2y = 14$ and $7x + 2y = 2$, then $y = ?$.

- A) 44 B) -40 C) 6
 D) -20 E) 22

5. Simplify. $\frac{2}{x-8} - \frac{3}{x}$

- A) $\frac{-6x+24}{x(x-8)}$ B) $\frac{-x-16}{x(x-8)}$ C) $\frac{-x-24}{x(x-8)}$
 D) $\frac{-6}{x(x-8)}$ E) $\frac{-x+24}{x(x-8)}$

6. The line with equation $5x - 4y = 3$ is perpendicular to

- A) $y = \frac{5}{4}x$ B) $y = \frac{-4}{5}x$ C) $y = \frac{-5}{4}x$
 D) $y = \frac{4}{5}x$ E) $y = \frac{4}{3}x$

7. Expand and simplify. $(7x - 6y)^2$

- A) $49x^2 + 36y^2$ B) $49x^2 - 84xy - 36y^2$ C) $49x^2 - 36y^2$
 D) $49x^2 - 84xy + 36y^2$ E) $49x^2 - 42xy + 36y^2$

8. Simplify. $\frac{(x^{15}y^{12})^2z}{x^5(y^4z^2)^2}$

- A) $\frac{x^6y^3}{z^2}$ B) $\frac{x^6y^3}{z^3}$ C) $\frac{x^{25}y^{16}}{z^3}$
 D) $\frac{x^{25}y^{16}}{z^2}$ E) $\frac{x^6y^6}{z^3}$

9. Simplify. $\frac{x^2 + x - 6}{x^2 - 4x + 4}$

- A) $\frac{x+3}{x-2}$ B) $\frac{x+6}{x-2}$ C) $\frac{x+2}{x-2}$
 D) $\frac{x-3}{x-2}$ E) $\frac{x-6}{x-2}$

10. Solve $\frac{1}{x-1} - \frac{4}{7} = 5$ for x .

- A) $\frac{46}{39}$ B) $\frac{39}{46}$ C) $\frac{39}{38}$
 D) $\frac{-8}{13}$ E) $\frac{38}{39}$

11. A rectangle has length 21 inches and width 16 inches. What is the length of a diagonal from one corner to the opposite corner, rounded to the nearest inch?

- A) 28 B) 24 C) 26
 D) 27 E) 25

12. If a line has slope -2 and passes through the point $(3, 2)$, what is the y -coordinate of the point on the line whose x -coordinate is 5?

- A) -2 B) -5 C) -6
 D) -3 E) -4

13. Simplify. $(\frac{7x}{x^{-4}})^{-2}$

- A) $\frac{1}{49x^6}$ B) $7x^6$ C) $\frac{1}{49}x^6$
 D) $\frac{7}{x^{10}}$ E) $\frac{1}{49x^{10}}$

14. A rectangular field is enclosed by 320 feet of fencing. If the length of the field is 6 feet more than its width, what is its length, in feet?

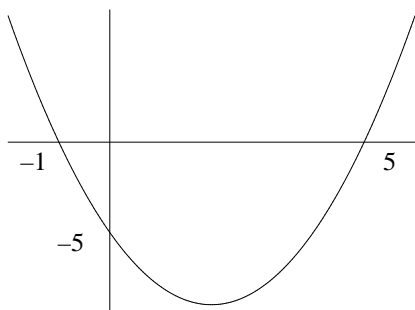
- A) 80 B) 83 C) 77
 D) 157 E) 163

15. What is F in the formula $L = \frac{3}{5}F - 5$ when $L = 8$?

- A) $\frac{55}{3}$ B) 5 C) $\frac{9}{5}$
 D) $\frac{39}{5}$ E) $\frac{65}{3}$

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

- A) $y = (x - 5)(x + 1)$ B) $y = (x + 5)(x - 1) - 10$ C) $y = 2(x - 5)(x + 1)$
 D) $y = 2(x + 5)(x - 1)$ E) $y = (x - 5)(x + 1) - 10$



17. 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) $\pm\frac{2\sqrt{2}}{7}$

18. Simplify. $\sqrt[3]{8x^{27} + x^{12}}$

A) $2x^4\sqrt[3]{x^{15} + 1}$ B) $8x^9 + x^4$ C) $2x^{24} + x^4$

D) $2x^9 + x^4$ E) $x^4\sqrt[3]{8x^{15} + 1}$

19. If $f(x) = 2x + 9$, and $f(a) = 7$, then $a = ?$

A) 9 B) 23 C) -1

D) 7 E) 8

20. One solution of $2x^2 = -x + 6$ is

A) 2 B) $\frac{2}{3}$ C) $\frac{3}{2}$

D) -1 E) $-\frac{3}{2}$

21. One of the factors of $3x^2 + 18x + 24$ is

A) $3x + 2$ B) $x + 4$ C) $x + 8$

D) $x + 24$ E) $3x + 4$

22. Solve $\frac{x-s}{7} = \frac{y-t}{5}$ for x .

A) $\frac{7}{5}y + \frac{-7}{5}t - s$ B) $\frac{5}{7}y + \frac{-1}{7}t + \frac{-1}{7}s$ C) $\frac{7}{5}y + \frac{-1}{5}t + \frac{1}{5}s$

D) $\frac{5}{7}y + \frac{-5}{7}t + s$ E) $\frac{7}{5}y + \frac{-7}{5}t + s$

23. Solve $-4x + 4 = -6 + 3x$ for x .

- A) $\frac{-2}{7}$ B) -10 C) -5
 D) $\frac{7}{10}$ E) $\frac{10}{7}$

24. Find $\frac{x^2}{x-y}$ when $x = -3$ and $y = -4$

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

25. Solve $-7x < x + 5$ and express the solution in interval notation.

- A) $(-\infty, \frac{-6}{5})$ B) $(\frac{-5}{8}, \infty)$ C) $(\frac{-8}{5}, \infty)$
 D) $(\frac{-5}{6}, \infty)$ E) $(-\infty, \frac{-5}{8})$

Key: KYOTE12CART3

1) \diamond A	2) \diamond E	3) \diamond D	4) \diamond D	5) \diamond E
6) \diamond B	7) \diamond D	8) \diamond C	9) \diamond A	10) \diamond A
11) \diamond C	12) \diamond A	13) \diamond E	14) \diamond B	15) \diamond E
16) \diamond A	17) \diamond A	18) \diamond E	19) \diamond C	20) \diamond C
21) \diamond B	22) \diamond E	23) \diamond E	24) \diamond D	25) \diamond B

Standards Table

Standard	Problems	Max	Score
KYOTECA.01.3:	17,24	2	
KYOTECA.02.3:	1,7	2	
KYOTECA.03.3:	8,13	2	
KYOTECA.04.3:	18	1	
KYOTECA.05.3:	21	1	
KYOTECA.06.3:	5	1	
KYOTECA.07.3:	9	1	
KYOTECA.08.3:	15,23	2	
KYOTECA.09.3:	22	1	
KYOTECA.10.3:	25	1	
KYOTECA.11.3:	20	1	
KYOTECA.12.3:	10	1	
KYOTECA.13.3:	4	1	
KYOTECA.14.3:	2,14	2	
KYOTECA.15.3:	11	1	
KYOTECA.16.3:	6,12	2	
KYOTECA.17.3:	16	1	
KYOTECA.18.3:	3,19	2	

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.