

KYOTE College Algebra Practice Exam 1

1. Which of the following equations has the same solution as $5x + 8 = x - 9$?

A) $4x = -1$ B) $4x = 17$ C) $6x = -17$

D) $6x = 17$ E) $4x = -17$

2. Simplify. $(-2x^4)^3(-2x^2)^2$

A) $8x^{11}$ B) $8x^{16}$ C) $-32x^{16}$

D) $32x^{16}$ E) $-32x^{11}$

3. If $f(x) = \sqrt{7-x}$, then which of the following sets is the domain of this function?

A) $x \leq 7$ B) $x \neq 7$ C) $x \geq 0$

D) $x \neq 0$ E) $x \geq 7$

4. One of the factors of $3x^2 + 8x - 35$ is

A) $3x - 7$ B) $3x + 7$ C) $x - 35$

D) $3x + 5$ E) $x - 5$

5. One solution of $3x^2 + 7x - 6 = 0$ is

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

D) -6 E) $\frac{2}{3}$

6. Solve $\frac{1}{x-1} - \frac{2}{7} = 3$ for x .

A) $\frac{26}{23}$ B) $\frac{-12}{23}$ C) $\frac{23}{26}$

D) $\frac{30}{23}$ E) $\frac{23}{30}$

7. Expand and simplify. $(3x - 6y)^2$

- A) $9x^2 - 36xy - 36y^2$ B) $9x^2 + 36y^2$ C) $9x^2 - 36xy + 36y^2$
 D) $9x^2 - 18xy + 36y^2$ E) $9x^2 - 36y^2$

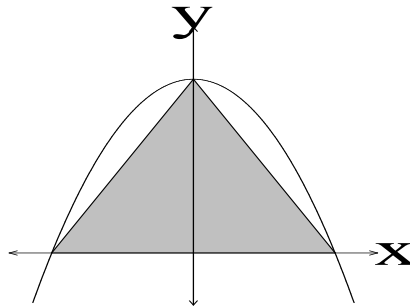
8. The line parallel to $2x + y = 5$ and passing through $(5, 4)$ has equation

- A) $y = 2x - 6$ B) $y = -2x + 14$ C) $y = 2x - 3$
 D) $y = -2x + 13$ E) $y = -2x - 6$

9. Simplify. $\frac{x^2 - x - 30}{x^2 - 12x + 36}$

- A) $\frac{x+6}{x-6}$ B) $\frac{x+5}{x-6}$ C) $\frac{x-30}{x-6}$
 D) $\frac{x+30}{x-6}$ E) $\frac{x-5}{x-6}$

10. The vertices of a triangle consist of the three points where the parabola $y = 7 - x^2$ intersects the coordinate axes as shown. What is the area of this triangle?

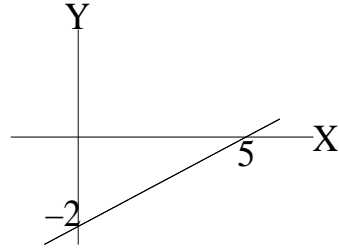


- A) $14\sqrt{7}$ B) $\frac{7\sqrt{7}}{2}$ C) 98
 D) $7\sqrt{7}$ E) 49

11. Simplify. $(-3x^{-5})^2(2x^3)^{-2}$

- A) $\frac{-6}{x^{16}}$ B) $\frac{9}{4x^{16}}$ C) $\frac{9}{4x^{12}}$
 D) $\frac{-9}{4x^{16}}$ E) $\frac{-6}{x^{12}}$

12. Which of the following is an equation of the line whose graph is shown below?



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

13. If x and y satisfy both $9x + 2y = 8$ and $7x + 2y = 4$, then $y = ?$.

- A) 9 B) 2 C) 18
 D) -5 E) -10

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

- A) $(\frac{-7}{6}, \infty)$ B) $(\frac{-7}{8}, \infty)$ C) $(-\infty, \frac{-7}{8})$
 D) $(\frac{-8}{7}, \infty)$ E) $(-\infty, \frac{-6}{7})$

15. If the hypotenuse of a right triangle has length 9 feet and one of the other sides has length 2 feet, what is the length of the remaining side, in feet?

- A) 7 B) $\sqrt{11}$ C) $\sqrt{7}$
 D) $\sqrt{85}$ E) $\sqrt{77}$

16. Solve $R = \frac{4}{7}T + \frac{-36}{7}$ for T .

- A) $\frac{4}{7}R + 9$ B) $\frac{7}{4}R + \frac{63}{4}$ C) $\frac{4}{7}R + \frac{36}{7}$
 D) $\frac{7}{4}R - 9$ E) $\frac{7}{4}R + 9$

17. Simplify. $\frac{8x}{x^2 + 9x + 20} + \frac{6}{x + 4}$

A) $\frac{8x + 6}{x^2 + 10x + 24}$ B) $\frac{8x + 6}{x^2 + 9x + 20}$ C) $\frac{14x}{x^2 + 9x + 20}$

D) $\frac{14x + 30}{x^2 + 9x + 20}$ E) $\frac{14x + 6}{x^2 + 9x + 20}$

18. If x and y are positive numbers, then $\sqrt{24x^{10}y^{-6}}$

A) $\pm \frac{2x^8\sqrt{6}}{y^4}$ B) $\pm \frac{2x^5\sqrt{6}}{y^3}$ C) $-2x^5y^3\sqrt{6}$

D) $\frac{2x^5\sqrt{6}}{y^3}$ E) $\frac{2x^8\sqrt{6}}{y^4}$

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

A) 9 B) 23 C) -1

D) 7 E) 8

20. Find $12(x)^{2/3}$ when $x = -8$.

A) 64 B) 48 C) -48

D) 256 E) -64

21. 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

22. Find $\frac{(x - (1 - 4x))}{x}$ when $x = -5$.

A) $\frac{26}{5}$ B) -21 C) 19

D) $\frac{-26}{5}$ E) $\frac{-14}{5}$

23. The surface area S of a cylinder is $S = 2\pi r^2 + 2\pi r h$ where r is the base radius and h is the height. What is h , in inches, when S is 175 square inches and r is 6 inches?

- A) $\frac{175 - 864\pi^2}{12\pi}$ B) $\frac{175 + 864\pi^2}{12\pi}$ C) $\frac{175 + 72\pi}{12\pi}$
 D) $\frac{25}{12\pi}$ E) $\frac{175 - 72\pi}{12\pi}$

24. A truck leaves an intersection going 42 miles per hour. Half an hour later, a car going 62 miles per hour follows the truck. If x is the time, in hours, required for the car to catch the truck, then which of the following equations can be used to solve for x ?

- A) $42x + 21 = 62x$ B) $42x + \frac{1}{2} = 62x$ C) $42x + 62 = 62x$
 D) $42x + 42 = 62x$ E) $42x + 30 = 62x$

25. Subtract $x^3 - 5x^2 + 1$ from $x^2 - x - 4$.

- A) $-x^3 + 6x^2 - x - 3$ B) $x^3 - 4x^2 + x + 5$ C) $x^3 - 6x^2 + x + 5$
 D) $-x^3 + 6x^2 - x - 5$ E) $-x^3 - 4x^2 - x - 5$

Key: KYOTE12CART1

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

Standards Table

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