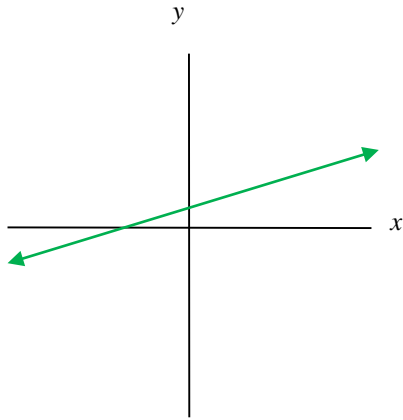


- 1) What is a *possible* equation for the graph shown below? _____



- (A) $y = -\frac{5}{7}x - 3$ (B) $y = \frac{5}{7}x - 3$ (C) $y = -\frac{5}{7}x + 3$
(D) $y = \frac{5}{7}x + 3$ (E) $y = -\frac{5}{7}x$

- 2) Without graphing the linear system below, state the number of solutions for the system of equations **and** describe the graphs of the equations as identical lines, parallel lines or lines that intersect at one point. _____

$$\begin{cases} x = 0.5 \\ -0.2 = y \end{cases}$$

- (A) No solution; parallel (B) 1 solution; intersecting (C) 2 solutions; intersecting
(D) Infinite solutions; identical (E) Cannot be determined

- 3) Solve the equation: _____

$$\frac{2}{z-2} + 1 = \frac{z}{z+2}$$

- (A) $z = -4$ (B) $z = -2$ (C) $z = 0$
(D) $z = 2$ (E) $z = 4$

4) Find the product.

$$(2r^4 - 3q^5)(2r^4 + 3q^5)$$

(A) $4r^{16} - 9q^{25}$

(B) $2r^4 - 3q^5$

(C) $4r^4 - 9q^5$

(D) $2r^8 - 3q^{10}$

(E) $4r^8 - 9q^{10}$

5) An experienced bricklayer constructs a small wall in 3 hours. The apprentice completes the job in 6 hours. How long will it take them to complete construction if they work together?

(A) 2 hours

(B) 3 hours

(C) 1.5 hours

(D) 9 hours

(E) 6 hours

6) Find the domain of the function.

$$f(x) = \frac{-7 - 6x}{x^3 + 6x^2 - 7x}$$

(A) $x \neq \{-1, 0, 7\}$

(B) $x \neq \{-1, 7\}$

(C) $x \neq \{-1, 0\}$

(D) $x \neq \{-7, 1\}$

(E) $x \neq \{-7, 0, 1\}$

7) Determine both the x and y -intercepts of the linear equation: $-2x + 3y = -1$.

(A) x -intercept: $\left(-\frac{1}{2}, 0\right)$
 y -intercept: $\left(0, \frac{1}{3}\right)$

(B) x -intercept: $\left(\frac{1}{3}, 0\right)$
 y -intercept: $\left(0, -\frac{1}{2}\right)$

(C) x -intercept: $\left(\frac{1}{2}, 0\right)$
 y -intercept: $\left(0, -\frac{1}{3}\right)$

(D) x -intercept: $\left(-\frac{1}{3}, 0\right)$
 y -intercept: $\left(0, \frac{1}{2}\right)$

(E) x -intercept: $(2, 0)$
 y -intercept: $(0, 3)$

8) Perform the indicated operation.

$$\frac{2P^3}{P^2 - 64} \div \frac{P^5}{(P + 8)^2}$$

(A) $\frac{2P + 8}{P^3 - 8P^2}$

(B) $\frac{2P + 16}{P^3 - 8P^2}$

(C) $\frac{2P + 16}{P - 8}$

(D) $\frac{P + 8}{P^3 - 8P^2}$

(E) $\frac{2P + 8}{P^3 - 8}$

- 9) Use the addition/elimination method to solve the system of equations.

$$\begin{cases} \frac{x}{2} + \frac{y}{8} = 3 \\ x - \frac{y}{4} = 0 \end{cases}$$

- (A) (3,12) (B) No solution (C) (3, -12)
(D) Infinite solutions (E) (-3,12)
-

- 10) Factor the polynomial completely: $-4k^2 + 24k - 36$.

- (A) $4(k-3)(k+3)$ (B) $4(k-3)(k-3)$ (C) $-4(k+3)(k-3)$
(D) $-4(k-3)(k-3)$ (E) $(k-3)(k-3)$
-

- 11) Perform the indicated operation: $5y\sqrt{8y} + 2\sqrt{50y^3}$.

- (A) $7y \cdot \sqrt{2}$ (B) $20y \cdot \sqrt{2y}$ (C) $7y \cdot \sqrt{2y}$
(D) $20y \cdot \sqrt{2}$ (E) $20 \cdot \sqrt{2}$
-

- 12) Find the slope of the line that intersects the coordinate points $(-1,8)$ and $(-1,5)$.

- (A) m is undefined (B) $m = \frac{2}{3}$ (C) $m = 0$
(D) $m = -\frac{3}{2}$ (E) $m = -1$
-

13) Simplify the complex fraction.

$$\frac{\frac{2}{x} + \frac{3}{y}}{\frac{2x - 3y}{xy}}$$

(A) $\frac{2x - 3y}{2y + 3x}$

(B) -1

(C) $\frac{2y + 3x}{2x - 3y}$

(D) $5x - y$

(E) $\frac{5x - 5y}{xy}$

14) The width of a rectangle is 7 centimeters less than twice its length. Its area is 30 square centimeters. Find the dimensions of the rectangle.

(A) Length: 5 cm
Width: 6 cm

(B) Length: 10 cm
Width: 3 cm

(C) Length: 5 cm
Width: 3 cm

(D) Length: 3 cm
Width: 10 cm

(E) Length: 6 cm
Width: 5 cm

15) Y varies inversely as the **square** of X . When $X = 5$, $Y = 4$. Find Y when $X = \frac{1}{2}$.

(A) $Y = 40$

(B) $Y = 100$

(C) $Y = 200$

(D) $Y = 400$

(E) $Y = 25$

- 16) One number is two more than a second number. Twice the first is 4 less than 3 times the second. Find the **larger** of the two numbers.

(A) 10 (B) 6 (C) 4
(D) 8 (E) 12

- 17) What is the equation of a line that intersects $(7, -11)$ and is perpendicular to the y -axis?

(A) $x = 7$ (B) $y = -11$ (C) $y = -1$
(D) $y = 7$ (E) $x = -11$

- 18) Rationalize the denominator of the following expression. Assume all variables are positive real numbers.

$$\frac{\sqrt{w} - \sqrt{4}}{\sqrt{w} + \sqrt{4}}$$

(A) $\frac{w - 8\sqrt{w} + 16}{w - 16}$ (B) $\frac{w^2 - 4}{w - 4}$ (C) $\frac{w - 4\sqrt{w} + 4}{w - 4}$
(D) $\frac{w - 2}{w - 4}$ (E) $\frac{w - 4\sqrt{w} + 4}{w - 2}$

19) If $g(x) = -5x^2 - 2x + 1$, find $g(-3)$.

- (A) 52
(D) -38

- (B) 22
(E) 51

(C) -37

20) Use properties of exponents to simplify the expression.

$$\frac{D^{\frac{1}{2}} \cdot D^{\frac{3}{4}}}{-D^{\frac{1}{4}}}$$

- (A) $-D^{\frac{3}{2}}$
(D) $D^{\frac{5}{4}}$

- (B) $D^{\frac{3}{2}}$
(E) $-D$

(C) D

21) Simplify the radical expression.

$$\sqrt[3]{-8R^6T}$$

- (A) $-2R^2$
(D) $2R^2 \cdot \sqrt[3]{T}$

- (B) $2R^2$
(E) $-2R^2 \cdot \sqrt[3]{4R^4T}$

(C) $-2R^2 \cdot \sqrt[3]{T}$

22) Perform the operation as indicated.

$$\frac{6N}{N-7} + \frac{5}{14-2N}$$

- (A) $\frac{12N-5}{2(N-7)}$
(D) $\frac{6N-5}{N-7}$

- (B) $\frac{6N+5}{N-7}$
(E) $\frac{-12N-5}{2(N-7)}$

(C) $\frac{-12N+5}{2(N-7)}$

23) Use the substitution method to solve the system of equations.

$$\begin{cases} 2x + 3 = y \\ 5y - 7x = 18 \end{cases}$$

- (A) No solution
(B) (1,5)
(C) (1,-5)
(D) (-1,5)
(E) Infinite solutions

24) Factor the polynomial **completely**.

$$\frac{4L^4 + 2L^5 + L^2}{9}$$

- (A) $L\left(\frac{4}{9}L^2 + \frac{2}{9}L^3 + \frac{1}{9}\right)$
(B) $4L^2 + 2L^3 + 1$
(C) $L^2(4L^2 + 2L^3 + 1)$
(D) $4L^4 + 2L^5 + L^2$
(E) $\frac{1}{9}L^2(4L^2 + 2L^3 + 1)$

25) Simplify the radical expression.

$$\sqrt[3]{\frac{3}{8x^6}}$$

- (A) $\frac{3}{8 \cdot \sqrt[3]{x^2}}$
(B) $\frac{3}{2x^2}$
(C) $\frac{\sqrt{3}}{2x^2}$
(D) $\frac{\sqrt[3]{3}}{2x^2}$
(E) $\sqrt[3]{\frac{3}{2x^2}}$

26) Simplify the expression completely.

$$\frac{(2x^6y^2)^5}{-32x^{20}y^{10}}$$

(A) $-\frac{1}{16x^9y^3}$

(B) $-x^{10}$

(C) $-16x^9y^{13}$

(D) x^{10}

(E) $\frac{1}{16x^9y^3}$

27) An object is thrown upward from the top of a 48-foot building with an initial velocity of 32 feet per second. The height, h , of the object after t seconds is given by the quadratic equation $h(t) = -16t^2 + 32t + 48$. When will the object hit the ground?

(A) 1 second

(B) 2 seconds

(C) 3 seconds

(D) 4 seconds

(E) 5 seconds

28) Simplify the expression: $[(8R^2 + 7) + (6R + 9)] - (4R^2 - 6R - 3)$.

(A) $4R^2 + 19$

(B) $-4R^2 - 12R - 13$

(C) $4R^2 + 12R + 13$

(D) $-4R^2 - 12R - 19$

(E) $4R^2 + 12R + 19$

29) Factor the binomial completely.

$$-32Q^7 + 72Q^3$$

- (A) $-8Q^3(2Q^2 - 3)(2Q^2 + 3)$ (B) $-Q^3(2Q^2 - 3)(2Q^2 + 3)$ (C) $8Q^3(2Q^2 - 3)(2Q^2 + 3)$
(D) $Q^3(2Q^2 - 3)(2Q^2 + 3)$ (E) $8Q^3(2Q^2 + 3)(2Q^2 + 3)$
-

30) Multiply the polynomials as indicated.

$$(1.1y - 0.7x^2)(1.1y + 0.7x^2)$$

- (A) $0.7x^4 - 1.1y^2$ (B) $1.1y^2 - 0.7x^4$ (C) $1.21y - 0.49x^2$
(D) $1.21y^2 - 0.49x^4$ (E) $0.49x^4 - 1.21y^2$
-

31) Factor the polynomial.

$$8y^2 - 14yx + 3x^2$$

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

32) Factor the binomial completely.

$$A^6 - B^4$$

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

33) Find the equation of a line that intersects (4,4) and (3, -5).

(A) $y = -9x + 32$

(B) $y = 9x - 40$

(C) $y = 9x$

(D) $y = 9x - 32$

(E) $y = -9x + 40$

34) Solve the equation $0 = 4M^2 + 11M + 6$.

(A) $M = \left\{-2, -\frac{3}{4}\right\}$

(B) $M = \left\{-2, \frac{3}{4}\right\}$

(C) $M = \left\{-\frac{4}{3}, 2\right\}$

(D) $M = \left\{\frac{3}{4}, 2\right\}$

(E) $M = \left\{-2, -\frac{4}{3}\right\}$

35) Identify the LCD for the given rational expressions: $\frac{5}{N^2-25}$ and $\frac{N+9}{3N^3-15N^2}$

(A) $N - 5$

(B) $3N^2(N - 5)^2(N + 5)$

(C) $3N^2(N - 5)(N + 5)$

(D) $3N(N - 5)(N + 5)$

(E) $3N^2(N + 5)$

ANSWER KEY

1	D	6	E	11	B	16	A	21	C	26	B	31	E
2	B	7	C	12	A	17	B	22	A	27	C	32	B
3	C	8	B	13	C	18	C	23	B	28	E	33	D
4	E	9	A	14	E	19	D	24	E	29	A	34	A
5	A	10	D	15	D	20	E	25	D	30	D	35	C