MAC1105 Test #1A: Intermediate Objective 1 - 2 Date _____

Name_____ Score _____

Find any values of the variable for which the rational expression is undefined. Write answer with ≠.

1) $\frac{z - 2}{3 - z}$

A) $z \neq 3, z \neq 2$ B) $z \neq -3$

C) $z \neq 3$ D) Never undefined

Write the rational expression in lowest terms.

2) $\frac{3k - 18}{12 - 2k}$

A) $\frac{3}{2}$ B) 1 C) -1 D) $-\frac{3}{2}$

Write the expression in lowest terms.

3) $\frac{2z^2 - 7z + 6}{3z^2 - 11z + 10}$

A) $\frac{2z - 3}{3z - 5}$ B) $\frac{z + 3}{z + 5}$ C) $\frac{z - 2}{z - 4}$ D) $\frac{2z - 2}{3z + 2}$

Multiply.

4) $\frac{4x + 12}{x - 1} \cdot \frac{2x^2 - 4x + 2}{x^2 - 9}$

A) $\frac{8(x - 1)}{x - 3}$ B) $\frac{8(x + 3)(x - 1)}{x^2 - 9}$ C) $\frac{4(x - 1)}{x - 3}$ D) $\frac{8(x - 1)}{x + 3}$

Divide.

5) $\frac{4x - 4y}{72 - 9z} \div \frac{2y - 2x}{z - 8}$

A) $\frac{2(x - y)}{9}$ B) $\frac{1}{36}$ C) $-\frac{2}{9}$ D) $\frac{2}{9}$

Perform the indicated operation and express in lowest terms.

6) $\frac{2x + 6}{x^2 + 4x + 3} - \frac{x + 5}{x^2 + 4x + 3}$

A) $\frac{x + 11}{x^2 + 4x + 3}$ B) $x + 1$ C) $\frac{1}{x + 3}$ D) $\frac{7}{x^2 + 4x + 3}$

Add or subtract as indicated. Write the answer in lowest terms.

7) $\frac{3}{14x} + \frac{9}{10x^2}$

A) $\frac{108}{70x^2}$ B) $\frac{12}{14x + 10x^2}$ C) $\frac{3(5x + 21)}{70x^2}$ D) $\frac{12}{140x^2}$

Add and subtract as indicated. Simplify and leave the numerator and denominator in your answer in factored form.

8) $\frac{x - 1}{x^2 + 10x + 24} + \frac{5x + 8}{x^2 + 3x - 18}$

A) $6x + 7$

B) $\frac{6x^2 + 24x + 35}{(x + 6)(x + 4)(x - 3)}$

C) $\frac{6x + 7}{2x^2 + 13x + 6}$

D) $\frac{6x^2 + 24x + 35}{(x - 6)(x - 4)(x + 3)}$

Simplify the complex fraction.

9) $\dfrac{\frac{2}{x} - \frac{x}{2}}{\frac{1}{2} - \frac{1}{x}}$

A) $2x(x + 2)$ B) $-(x + 2)$ C) $-(x - 2)$ D) $x + 2$

Simplify the expression, using only positive exponents in your answer.

10) $\dfrac{x^{-2} - 9y^{-2}}{10y - 30x}$

A) $\dfrac{y^2 + 3x}{10x^2}$ B) $10x - 30y^2$ C) $\dfrac{y + 3x}{10x^2y^2}$ D) $\dfrac{x + 3y}{10x^2y}$

Perform the division.

11) $\dfrac{x^4 + 5x^2 + 8}{x^2 + 1}$

A) $x^2 + 4 + \dfrac{4}{x^2 + 1}$ B) $x^2 + 4x + 2$ C) $x^2 + 4$ D) $x^2 + 4 + \dfrac{3}{2}$

12) $\dfrac{y^2 + 10y + 25}{y + 5}$

A) $y - 5$ B) $y^2 + 5$ C) $y + 5$ D) $y + \dfrac{5}{y + 5}$

Solve the system by the elimination method. If the equations are dependent, write your answer with x being arbitrary.

13)
$$\begin{cases} 2x - 3y = -2 \\ 6x - 9y = 6 \end{cases}$$

A) {(-1, 0)} B) {(5, -4)}
C) {(x, y) | 2x - 3y = -2} D) ∅

Solve the system by the substitution method. If the equations are dependent, write your answer with y being arbitrary.

14)
$$\begin{cases} x = 9 + 2y \\ -7x - 3y = 56 \end{cases}$$

A) {(-6, -6)} B) {(-5, -7)} C) {(5, -6)} D) ∅

Solve the system by elimination. If the system is inconsistent or has dependent equations, say so.

15)
$$\begin{aligned} 5x - 2y &= 3 \\ -20x + 8y &= -12 \end{aligned}$$

A) {(1, 1)}
B) {(-3, -9)}
C) {(x, y) | 5x - 2y = 3}; dependent equations
D) ∅; inconsistent system

Solve the problem.

16) A student takes out two loans totaling $13,000 to help pay for college expenses. One loan is at 10% simple interest, and the other is at 9% simple interest. The first-year interest is $1240. Find the amount of the loan at 9%.

A) $7000 B) $540 C) $700 D) $6000

Solve the system of linear equations. State the value of x in the solution to the system.

17)

$$\begin{cases} x + y + z = -1 \\ x - y + 4z = -17 \\ 4x + y + z = -13 \end{cases}$$

A) -2 B) -4 C) 5 D) 0

Solve the problem by using three variables.

18) A basketball fieldhouse seats 15,000. Courtside seats sell for $10, endzone for $6, and balcony for $4. The total revenue from a sell-out is $82,000. If half the courtside and balcony seats and all the endzone seats are sold, the total revenue is $47,000. How many of each type are there?

Let c represent the number of courtside seats sold.
Let x represent the number of endzone seats sold.
Let b represent the number of balcony seats sold.

Choose the correct system of equations to solve the problem stated above.

A) $c + x + b = 15{,}000$
$10c + 6x + 4b = 82{,}000$
$.05c + x + .05b = 47{,}000$

B) $c + x + b = 82{,}000$
$10c + 6x + 4b = 15{,}000$
$.05(c + x + b) = 47{,}000$

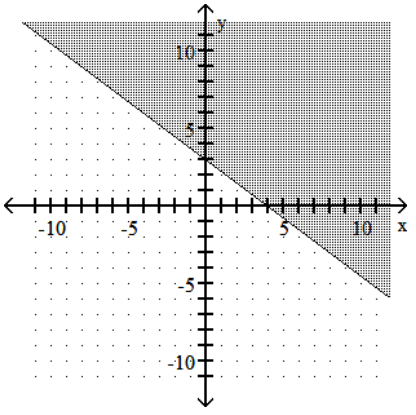
C) $c + x + b = 15{,}000$
$10c + 6x + 4b = 82{,}000$
$5c + 6x + 2b = 47{,}000$

D) $c + x + b = 15{,}000$
$10c + 6x + 4b = 82{,}000$
$2c + 6x + 2b = 47{,}000$

Graph the linear inequality.

19) $-3x - 4y \leq -12$

A)



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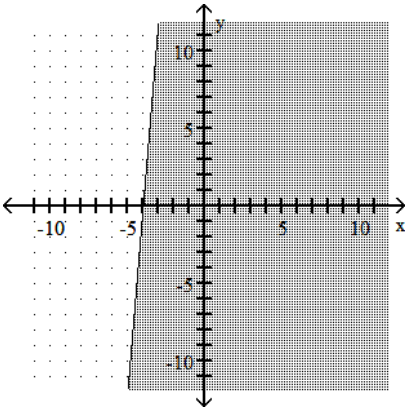

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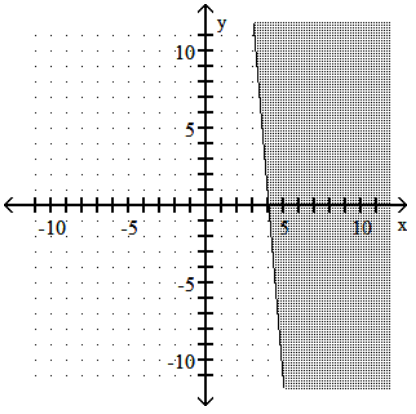

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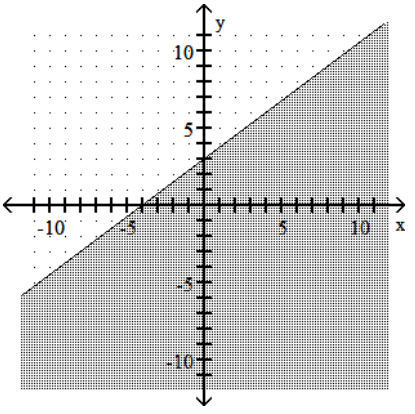
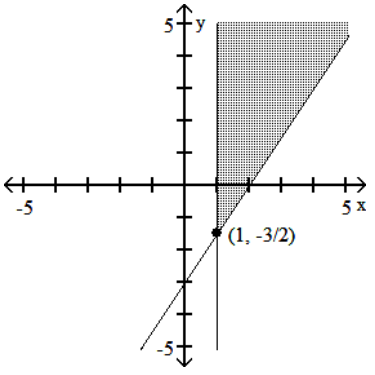


Graph the system of inequalities.

20) $3x - 2y \leq 6$
$x - 1 \geq 0$

A)



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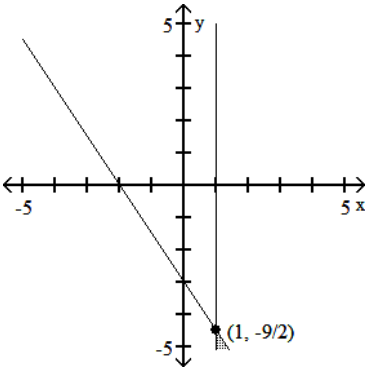
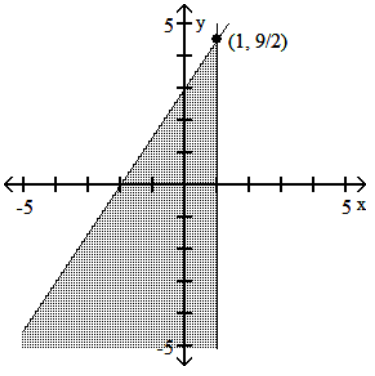


C)



D)