MIAMI DADE COLLEGE
INTERAMERICAN CAMPUS
DEPARTMENT OF MATHEMATICS
MAT 1033.
STUDY GUIDE
RATIONAL EXPRESSIONS

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Find all values that make the expression undefined.

1) $\frac{4}{a+9}$

A) -9 B) None C) 0 D) 9

Find the numerical value of the expression for the given value of x.

2) $\frac{3-3x}{9x^2+6x-7}$, $x = -3$

A) $\frac{3}{23}$ B) $\frac{3}{14}$ C) $-\frac{3}{46}$ D) $-\frac{3}{28}$

Write the expression in lowest terms.

3) $\frac{a^2-36}{a^2+10a+24}$

A) $\frac{a-6}{a-4}$ B) $\frac{a-6}{a+4}$ C) $\frac{a+6}{a-4}$ D) $\frac{a+6}{a+4}$

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

4) $\frac{m^2-9m}{9-m}$

Perform the indicated operation. Give the answer in lowest terms.

5) $\frac{z^2+10z+16}{z^2+11z+18} \div \frac{z^2+8z}{z^2+6z-27}$

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Write the expression in lowest terms.

6) $\frac{a^2-9a}{(a+2)(a-9)}$

A) $\frac{a-9}{a+2}$ B) $\frac{1}{a+2}$ C) $\frac{a}{a+2}$ D) $\frac{a^2}{a+2}$

Find all values that make the expression undefined.

7) $\frac{7y-6}{y^2-36}$

A) $\frac{6}{7}$ B) 36 C) 6 D) 6, -6

Multiply. Write the answer in lowest terms.

8) $\frac{3p - 3}{p} \cdot \frac{4p^2}{8p - 8}$

A) $\frac{12p^3 - 12p^2}{8p^2 - 8p}$ B) $\frac{2}{3p}$ C) $\frac{24p^2 + 48p + 24}{4p^3}$ D) $\frac{3p}{2}$

Rewrite the expression with the indicated denominator.

9) $\frac{4}{4x} = \frac{}{20x^2}$

A) $\frac{20}{20x^2}$ B) $\frac{4}{20x^2}$ C) $\frac{4x^2}{20x^2}$ D) $\frac{20x}{20x^2}$

Simplify the complex fraction.

10) $\frac{4 + \frac{2}{x}}{\frac{x}{3} + \frac{1}{6}}$

A) 1 B) $\frac{x}{12}$ C) $\frac{12}{x}$ D) 12

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Simplify the complex fraction. When necessary, use positive exponents.

11) $\frac{\frac{5}{3r - 1} - 5}{\frac{5}{3r - 1} + 5}$

Perform the indicated operation and simplify.

12) $\frac{2}{y^2 - 3y + 2} + \frac{6}{y^2 - 1}$

Solve the equation.

13) $\frac{7}{y + 3} - \frac{2}{y - 3} = \frac{13}{y^2 - 9}$

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

14) $\frac{1}{x - 1} + \frac{1}{2x - 2} = \frac{3}{2}$

A) {2} B) {1} C) {6} D) {0}

Solve the problem.

15) The speed of a stream is 5 mph. If a boat travels 60 miles downstream in the same time that it takes to travel 30 miles upstream, what is the speed of the boat in still water?

A) 15 mph B) 10 mph C) 17 mph D) 18 mph

16) One printer can do a printing job in 5 hours. Another printer can do the same job in 14 hours. How long can they do the job working together?

A) $\frac{1}{19}$ hours B) $7\frac{7}{9}$ hours C) $3\frac{13}{19}$ hours D) $3\frac{1}{2}$ hours

17) In a certain fraction, the numerator is 4 less than the denominator. If 2 is added to both the numerator and the denominator, the resulting fraction is equal to $\frac{4}{8}$. Find the original fraction.

A) $\frac{10}{6}$ B) $\frac{6}{10}$ C) $\frac{6}{2}$ D) $\frac{2}{6}$

18) If m varies directly as p, and $m = 21$ when $p = 3$, find m when p is 4.

A) $m = 16$ B) $m = 49$ C) $m = 3$ D) $m = 28$

19) If x varies inversely as v, and $x = 15$ when $v = 7$, find x when $v = 35$.

A) $x = 3$ B) $x = 5$ C) $x = 21$ D) $x = 49$