

Math103 Intermediate Algebra – Spring 2008 – DLA – Test 3

Name \_\_\_\_\_

Each of the 19 questions is worth 5 points plus 1 points for each of 5 homework problems for a total of 100

**Express the rational expression in lowest terms.**

$$1) \frac{4x + 2}{12x^2 + 22x + 8}$$

**Perform the indicated operation and express in lowest terms.**

$$2) \frac{k^2 + 12k + 35}{k^2 + 13k + 40} \cdot \frac{k^2 + 8k}{k^2 + 9k + 14}$$

$$3) \frac{(2x - 7)(x + 1)}{(x + 6)(x - 3)} \div \frac{(x + 1)(3x + 7)}{(x + 6)(x - 3)}$$

$$4) \frac{2x + 7}{x^2 + 6x + 8} - \frac{x + 3}{x^2 + 6x + 8}$$

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

$$5) \frac{3}{r} + \frac{5}{r-6}$$

$$6) \frac{1}{8x^5y^2} - \frac{11}{2xy}$$

$$7) \frac{2ab}{a^2 - b^2} - \frac{b}{a - b} + 4$$

**Simplify the complex fraction.**

$$8) \frac{\frac{x}{5}}{\frac{7}{x+3}}$$

$$9) \frac{9 + \frac{3}{x}}{\frac{x}{4} + \frac{1}{12}}$$

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

$$10) \frac{x^{-2} - 4y^{-2}}{9y - 18x}$$

**Solve the equation.**

$$11) 1 + \frac{1}{x} = \frac{12}{x^2}$$

$$12) \frac{12}{x-4} = 1 + \frac{14}{x+4}$$

$$13) \frac{4x-6}{2x+1} = \frac{2x-1}{x+6}$$

**Solve the formula for the specified variable.**

14)  $\frac{1}{a} + \frac{1}{b} = c$  for b

**Solve the problem.**

15) A plane flies 450 miles with the wind and 300 miles against the wind in the same length of time. If the speed of the wind is 21 mph, what is the speed of the plane in still air?

16) Frank can type a report in 4 hours and James takes 6 hours. How long will it take the two of them typing together?

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

$$\begin{aligned} 17) \quad x + y &= -7 \\ y &= 2x - 4 \end{aligned}$$

$$\begin{aligned} 18) \quad 6y - 6 &= -x \\ 5x - 4y &= -4 \end{aligned}$$

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

$$\begin{aligned} 19) \quad x - 5y &= -7 \\ -7x - 4y &= 49 \end{aligned}$$