

Name:

Section:

**Math 010: Intermediate Algebra**

**Fall 2011 : Exam 3A**

**Sections 4.6 – 6.3**

**Matching:** Simplify the expression on the right and match it with the expression on the left. You will use an answer more than once. Write the answer on the lines below. Each problem is worth 4 points.

1.  $\frac{1}{a} + \frac{1}{b}$

a.  $\frac{1}{a-b}$

2.  $\frac{a-b}{a^2-b^2}$

b.  $\frac{a+b}{ab}$

3.  $\frac{a^2+2ab+b^2}{a} \div (ab+b^2)$

c.  $\frac{1}{a+b}$

4.  $\frac{1}{b} - \frac{1}{a}$

d.  $\frac{a-b}{ab}$

5.  $\frac{a+2b}{a^2+2ab-ab-2b^2}$

1. \_\_\_\_\_ 2. \_\_\_\_\_ 3. \_\_\_\_\_ 4. \_\_\_\_\_ 5. \_\_\_\_\_

The following 6 Short Answer problems are worth 5 points each.

6. Find the LCD for  $\frac{3x+1}{2x^2+5x-3}$  and  $\frac{1}{x^2+3x}$ . (show steps)

7. Factor:  $y^3-27$

8. Solve:  $y(y-6)=-9$  (show steps)

9. Simplify:  $\sqrt{125x^3y^4}$

10. Rewrite with a rational exponent :  $\sqrt[4]{x^3}$

11. Simplify:  $\sqrt[3]{-64}$

The following 5 problems are multiple choice. Each problem is worth 5 points. Please indicate the letter of your answer on the line.

12. Which of the following expressions simplify to be -1?

I.  $\frac{x+4}{x-4}$

II.  $\frac{x-4}{4-x}$

III.  $\frac{x-4}{-4+x}$

- a. I and II
- b. II and III
- c. Only I
- d. Only II
- e. Only III

Answer #12 : \_\_\_\_\_

13. Find the domain of :  $f(x) = \frac{3x+2}{2x^2-18}$

- a.  $\{x|x \neq 2, x \neq 3, x \neq -3\}$
- b.  $\{x|x \text{ is a real number}\}$
- c.  $\{x|x \neq 3, x \neq -3\}$
- d.  $\{x|x \neq -\frac{2}{3}\}$
- e.  $\{x|x \neq -\frac{2}{3}, x \neq 3, x \neq -3\}$

Answer #13: \_\_\_\_\_

14. Solve for  $x$ :  $\frac{1}{x} + \frac{1}{y} = 1$

a.  $\frac{1}{1-y}$

b.  $1-y$

c.  $y+1$

d.  $\frac{y}{y-1}$

Answer #14: \_\_\_\_\_

15. Subtract:  $\frac{15}{z^2-4z-5} - \frac{10}{z^2-6z+5}$

a.  $\frac{-5}{(z-1)(z-5)(z+1)}$

b.  $\frac{5}{(z-1)(z+1)}$

c.  $\frac{5z}{(z-1)(z-5)(z+1)}$

d.  $5z-25$

e. None of the above.

Answer #15: \_\_\_\_\_

16. Solve:  $\frac{x}{x-2} + \frac{2}{3} = \frac{2}{x-2}$

a. No Solution

b.  $x = 2$

c.  $x = 0$

d.  $x = \frac{4}{3}$

e.  $x = \frac{8}{5}$

Answer #16: \_\_\_\_\_

17. Rewrite as a complex fraction with positive exponents and simplify:  $\frac{1+y^{-1}}{y^{-2}-1}$  .  
(9 points)

18. Dan and Katie work as phone solicitors. They work in batches of 400 calls. Dan can finish a batch in an average of 7 hours and Katie can finish a batch in 9 hours. How long would it take them to finish a batch if they worked together? Write your answer as a mixed number and be sure to include the units. (8 points)

19. One of the legs of a right triangle is 1 inch shorter than the other. The hypotenuse is 5 inches. Using the Pythagorean Theorem, set up the equation and use algebra to find the lengths of the 2 legs (include units). (8 points)