Math 1010 - Exam 1

University of Utah

Fall 2009

Name: _____

1. Draw a real number line below, and plot and label the solutions to the following arithmetic problems. (10 points total)

(a) $3 + 2 = ?$ (2 points)

(b) $-1 - (-3) = ?$ (3 points)

(c) $(-2) \times 3 = ?$ (2 points)

(d) $\frac{2}{5} + \frac{3}{2} = ?$ (3 points)

2. Evaluate the following expressions. (15 points total)

(a) $5\frac{2}{3} + 3\frac{1}{5}$ (3 points)

(b) $(-3)^3$ (3 points)

(c) $|-2| + (-|-4|)$ (3 points)

(d) $\frac{3}{5} \div \frac{4}{3}$ (3 points)

(e) $21 - 5(7 - 5)$ (3 points)

3. What property of real numbers is exemplified in the following expression: (5 points)

$$a(b+c) = ab + ac$$

4. Simplify the following algebraic expressions. (15 points total)

   (a) $8x - 5x + 7x$ (3 points)

   (b) $3x^2 - 7 + 2x + 5x^2 + 11x - 3$ (4 points)

   (c) $8(z^3 - 4z^2 + 2)$ (3 points)

   (d) $x(x^2 + 3) - 3(x + 4)$ (5 points)

5. Evaluate the following expressions for the specified values of the variable(s). If not possible, state the reason. (10 points total)

(a) $3y^2 + 10$

i. $y = -2$ (2 points)

ii. $y = \frac{1}{2}$ (3 points)

(b) $\frac{x}{x - y}$

i. $x = 0, y = 10$ (2 points)

ii. $x = 3, y = 3$ (3 points)

6. Find the value of x that satisfies the given linear equation. (10 points total)

   (a) $8x - 10 = 0$ (4 points)

   (b) $6(x + 2) = 30$ (6 points)

7. Solve the following percentage problems. (10 points total)

   (a) What is 250% of 32? (5 points)

   (b) What is 4% of 500? (5 points)

8. A restaraunt sells a bottle of wine for $\$25$ and paid $\$15$ for the bottle.

   (a) What is the markup? (3 points)

   (b) What is the markup rate? (5 points)

9. Using the formula:

$$F = \frac{9}{5}C + 32$$

   and given the fact that water freezes when $C = 0^\circ$ and boils when $C = 100^\circ$ calcualte: (7 points total)

   (a) The temperature in Fahrenheit at which water freezes.
   (2 points)

   (b) The temperature in Fahrenheit at which water boils.
   (5 points)

10. Solve the following inequality and sketch the solution on the real number line. (10 points)

$$3x - 11 > -x + 7.$$