# **ASSIGNMENT** 1

#### DYLAN ZWICK'S MATH 1010 CLASS

## 1. Section 1.1 - The Real Number System

Determing which of the real numbers in the set are:

- (1) natural numbers,
- (2) integers,
- (3) rational numbers,
- (4) irrational numbers.

**1.1.1:** 
$$-\left\{-6, -\sqrt{6}, -\frac{4}{3}, 0, \frac{5}{8}, \sqrt{2}, 2, \pi, 6\right\}.$$

**1.1.3:** 
$$-\left\{-4.2, \sqrt{4}, -\frac{1}{9}, 0, \frac{3}{11}, \sqrt{11}, 5.\overline{5}, 5.543\right\}.$$

Date: Due Friday, September 4th.

For the next two problems use an overbar symbol to rewrite the decimal using the smallest number of digits possible.

**1.1.7:** - 2.121212...

**1.1.8:** - 0.436436436...

**1.1.11:** - List all odd integers between  $\pi$  and 10.

**1.1.13:** Plot the real numbers in the set  $\{3, \frac{5}{2}, -\frac{7}{2}, -5.2\}$  on the real number line.

In the following exercises, place the correct inequality symbol between the pair of numbers.

**1.1.19:**  $\frac{4}{5}$  1 **1.1.22:** 9 - 1 **1.1.23:** -5 - 2 **1.1.26:**  $\frac{3}{2}$   $\frac{5}{2}$ 

In the following exercises, find the distance between the pair of real numbers.

1.1.29: 4 and 10

1.1.32: -54 and 32
 1.1.33: 18 and -32
 1.1.36: 0 and 125
 1.1.39: -6 and -9
 1.1.40: -12 and -7

In the following exercises, evaluate the given expression.

1.1.42: |62|1.1.43: |-225|1.1.48: -|-25|1.1.51: -|3.5|1.1.53:  $|-\pi|$ 1.1.54:  $-|\pi|$ 

In the following exercises, place the correct symbol (<,>, or =) between the pair of real numbers.

**1.1.55:** |-6| |2| **1.1.58:** |150| |-310| **1.1.59:** |-1.8| |1.8| **1.1.62:**  $-|-\frac{7}{3}|$   $-|\frac{1}{3}|$ 

In the following exercises, write the statement using inequality notation. **1.1.83:** *x* is negative.

**1.1.85:** *u* is at least 16.

**1.1.91:** Find the two possible values of a given |a| = 4.

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2. SECTION 1.2 - OPERATIONS WITH REAL NUMBERS Evaluate the expressions.

1.2.1: 
$$13 + 32$$
  
1.2.2:  $16 + 84$   
1.2.4:  $-5 + 9$   
1.2.6:  $-5.1 + 0.9$   
1.2.9:  $12.6 + (-38.5)$   
1.2.12:  $-3 - 17$   
1.2.15:  $4 - (-11) + 9$   
1.2.17:  $5.3 - 2.2 - 6.9$   
1.2.20:  $6 + 26 - 17 + (-10)$   
1.2.23:  $\frac{3}{4} - \frac{1}{4}$   
1.2.26:  $\frac{6}{7} + (-\frac{3}{7})$   
1.2.31:  $10\frac{5}{8} - 6\frac{1}{4}$   
1.2.35:  $-(-11.325) + |34.625|$   
1.2.37:  $-|-6\frac{7}{8}| - 8\frac{1}{4}$ 

**1.2.42:** Write the expression  $\frac{2}{3} + \frac{2}{3} + \frac{2}{3} + \frac{2}{3}$  as a multiplication problem.

In the following exercises find the requested product.

1.2.45: 
$$5(-6)$$
  
1.2.48:  $(-4)(-7)$   
1.2.51:  $(-1)(12)(-3)$   
1.2.54:  $\left(-\frac{4}{7}\right)\left(-\frac{4}{5}\right)$   
1.2.55:  $-\frac{3}{2}\left(\frac{8}{5}\right)$   
1.2.58:  $\frac{1}{3}\left(\frac{2}{3}\right)$   
1.2.61:  $\frac{1}{3}\left(-\frac{3}{4}\right)(2)$ 

In the following exercises, find the reciprocal

**1.2.63:** 6  
**1.2.66:** 
$$\frac{9}{5}$$
  
**1.2.68:**  $-\frac{2}{13}$ 

In the following exercises, evaluate the given expression.

1.2.70: 
$$-\frac{30}{-15}$$
  
1.2.71:  $-48 \div 16$   
1.2.76:  $-\frac{11}{12} \div \frac{5}{24}$   
1.2.79:  $-4\frac{1}{4} \div -5\frac{5}{8}$   
1.2.81:  $4\frac{1}{8} \div 4\frac{1}{2}$ 

**1.2.87:** Write the expression  $-(7 \cdot 7 \cdot 7)$  using exponential notation.

In the following problems evaluate the given exponential expression.

**1.2.91:** 
$$(-2)^4$$
  
**1.2.96:**  $\left(\frac{2}{3}\right)^4$ 

In the following exercises, evaluate the given expression.

**1.2.105:**  $24 - 5 \cdot 2^2$ **1.2.109:** 14 - 2(8 - 4)**1.2.112:**  $72 - 8(6^2 \div 9)$ **1.2.115:**  $5^3 + |-14 + 4|$ **1.2.119:**  $\frac{4^2 - 5}{11} - 7$ 

**1.2.121:** 
$$\frac{6 \cdot 2^2 - 12}{3^2 + 3}$$

**1.2.122:** 
$$\frac{7^2 - 2(11)}{5^2 + 8(-2)}$$

- **1.2.134:** *Profit* The midyear financial statement of a clothing company showed a profit of \$1,345,298.55. At the close of the year, the financial statement showed a profit for the year of \$867,132.87. Find the profit (or loss) of the company for the second 6 months of the year.
- **1.2.138:** (a): You save \$60 per month for 30 years. How much money has been set aside during the 30 years?
  - (b): If the money in part (a) is deposited in a savings account earning 3% interest compounded monthly, the total amount in the account after 30 years wil be:

$$60\left[\left(1+\frac{0.03}{12}\right)^{360}-1\right]\left(1+\frac{12}{0.03}\right).$$

Use a calculator to determine this amount.

(c): How much of the amount in part (b) is earnings from interest?

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#### 3. Section 1.3 - Properties of Real Numbers

In the following exercises identify the property of real numbers illustrated by the statement.

**1.3.1:** 18 - 18 = 0**1.3.5:** 13 + 12 = 12 + 13**1.3.12:**  $1 \cdot 9k = 9k$ 

In the following exercises complete the statement using the specified property of real numbers.

**1.3.21:** Commutative Property of Multiplication: 15(-3) =

**1.3.24:** Distributive Property: (8 - y)(4) =

In the following exercises give (a) the additive inverse and (b) the multiplicative inverse of the quantity.

**1.3.33:** 
$$\frac{1}{2}$$
  
**1.3.37:**  $6z, z \neq 0$   
**1.3.40:**  $y - 7, y \neq 7$ .

In the following exercises rewrite the expression using the Distributive Property.

**1.3.65:** Identify the property of real numbers that justifies each step.

$$2x - 5 = 6$$

$$(2x - 5) + 5 = 6 + 5$$

$$2x + (-5 + 5) = 11$$

$$2x = 11$$

$$\frac{1}{2}(2x) = \frac{1}{2}(11)$$

$$\left(\frac{1}{2} \cdot 2\right)x = \frac{11}{2}$$

$$1 \cdot x = \frac{11}{2}$$

$$x = \frac{11}{2}$$