

Math 172-Quiz # 1

2015

Name: \_\_\_\_\_

Total: 40 Points

**Part A:** For these short answer questions, it is not necessary to show any work. Place your final answer in the space provided. Each answer is worth one point.

1. Given  $A = \{4\}$ ,  $B = \{2, 3, 6, 7\}$ ,  $C = \{x | x \text{ is a positive even integer}\}$ , find:

$$C = \{2, 4, 6, 8, \dots\}$$

a)  $B \cap C$

$$\underline{\{2, 6\}}$$

b)  $(A \cup B) \cap C$

$$\underline{\{2, 4, 6\}}$$

$$A \cup B = \{4, 2, 3, 6, 7\}$$

c)  $Z \cap (A \cup B)$

$$\underline{\{2, 3, 4, 6, 7\}}$$

d)  $A \cup (B \cap C)$

$$\underline{\{2, 4, 6\}}$$

2. List **all** of the sets (R, Q, I, Z, W, N) that the following numbers belong to:

a)  $0.\bar{2}$

$$\underline{R, Q}$$

b)  $\frac{2}{3}$

$$\underline{R, Q}$$

c)  $\pi$

$$\underline{R, I}$$

d)  $-2$

$$\underline{R, Q, Z}$$

e)  $0$

$$\underline{R, Q, Z, W}$$

3. Determine whether each of the following statements is True or False:

a)  $W \cup N = W$

T

b)  $0 \in Q$

T

c)  $0 \in N$

F

d)  $\sqrt{16} \in Q$

$$\sqrt{16} = 4$$

T

e)  $Q \subseteq I$

F

4. State whether the equations below are True or False for all real numbers:

a)  $\frac{14m+8n}{2} = 7m + 8n$

F

b)  $-8(x - 2y) = -8x + 16y$

T

c)  $\frac{m+5}{m+6} = \frac{5}{6}$

F

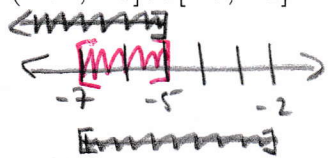
d)  $12a = (-2a)(-6a)$

F

5. Write each union or intersection as a single interval, if possible. If it can't be written as a single interval, write the original interval in the space provided. If the answer is the empty set, say so.

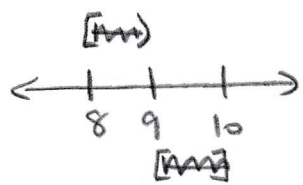
a)  $(-\infty, -5] \cap [-7, -2]$

$[-7, -5]$



b)  $[8, 9) \cap [9, 10]$

$\emptyset$



**Part B:** For these questions, show your work. Place your final answer in the space provided. Each question is worth two points.

6. Evaluate the following expressions. Reduce any fractions to lowest terms.

a)  $|5 - 9| - \sqrt{16}\left(\frac{-5}{2}\right)$   
 $= |-4| - 4\left(\frac{-5}{2}\right)$   
 $= 4 + \frac{20}{2}$   
 $= 4 + 10$   
 $= 14$

14

b)  $-5^2 \div \left(\frac{1}{2}\right) - 16 \div 0.2$   
 $= -25 \times 2 - \frac{16}{0.2}$   
 $= -50 - \frac{160}{2}$   
 $= -50 - 80$   
 $= -130$

-130

$$\begin{aligned} \text{c) } & 1.7(-0.7) + 0.1(26.4) \\ & = -1.19 + 2.64 \\ & = 1.45 \end{aligned}$$

$$\begin{array}{r} 1.7 \\ \times 0.7 \\ \hline 1.19 \end{array}$$

$$\begin{array}{r} 1.45 \\ \hline 2.64 \\ -1.19 \\ \hline 1.45 \end{array}$$

$$\begin{aligned} \text{d) } & \sqrt{5^2 - 4^2} - (5-4)^2 \\ & = \sqrt{25-16} - (1)^2 \\ & = \sqrt{9} - 1 \\ & = 3 - 1 \\ & = 2 \end{aligned}$$

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2

$$\begin{aligned} \text{e) } & 8 \div (-0.5) \times \frac{1}{4} \div \frac{2}{7} \\ & = \frac{8}{-0.5} \times \frac{1}{4} \times \frac{7}{2} \\ & = \frac{20}{-5} \times \frac{1}{4} \times \frac{7}{2} \\ & = -4 \times \frac{7}{2} \\ & = -14 \end{aligned}$$

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-14

$$\text{f) } \sqrt{b^2 - 4ac} \text{ where } a = 2, b = -1, c = -3$$

$$\begin{aligned} & = \sqrt{(-1)^2 - 4(2)(-3)} \\ & = \sqrt{1 + 24} \\ & = \sqrt{25} \\ & = 5 \end{aligned}$$

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5

$$\text{g) } \frac{y_2 - y_1}{x_2 - x_1} \text{ where } x_1 = -4, x_2 = 6, y_1 = 5, y_2 = -15$$

$$\begin{aligned} & = \frac{-15 - 5}{6 - (-4)} \\ & = \frac{-20}{10} \\ & = -2 \end{aligned}$$

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-2

7. Simplify the expressions below. Your answers can be left in decimal form.

a)  $10(0.03m - c) + 0.3(2m + 30c)$

$$= 0.3m - 10c + 0.6m + 9c$$

$$= 0.9m - c$$

$$\underline{0.9m - c}$$

b)  $5a(6a - 7) - 3a(10a - 4)$

$$= 30a^2 - 35a - 30a^2 + 12a$$

$$= -23a$$

$$\underline{-23a}$$

c)  $\frac{56-49n}{7} - \frac{63-54n}{9}$

$$= \frac{1}{7}(56-49n) - \frac{1}{9}(63-54n)$$

$$= 8 - 7n - 7 + 6n$$

$$= 1 - n$$

$$\underline{1 - n}$$