

Student ID		

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

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

Show all your work.  
If necessary, use extra sheets.

When appropriate,  
**BOX** your final answer.

M\$5  
Homework

# 2

1. Which set of numbers is *not* closed with respect to the given operation?

- (1) integers with respect to multiplication
- (2) even integers with respect to addition
- (3) integers with respect to subtraction
- (4) odd integers with respect to addition

2. Which of the following expressions is irrational?

- (1)  $\frac{\sqrt{121}}{11}$
- (2)  $-\sqrt{576}$
- (3)  $\frac{2\pi}{3\pi}$
- (4)  $\sqrt{\frac{4}{3}}$

3. Which property of real numbers is illustrated by the equation  $\otimes + (\Delta + 0) = (\otimes + \Delta) + 0$ ?

4. Name the property illustrated in each equation below:

a.  $m + 2n = 2n + m$

b.  $(r + s) + t = t + (r + s)$

c.  $2(x + 2y) = 2x + 4y$

5. State whether the given set is closed under (i) addition (ii) subtraction (iii) multiplication or (iv) division. Justify your response.

a.  $\left\{ 1, \frac{1}{2}, \frac{1}{4}, \frac{1}{8}, \frac{1}{16}, \frac{1}{32}, \dots \right\}$

b.  $\{ \text{all positive multiples of } 3 \}$

6. State the property of real numbers that is illustrated by each equation.

a.  $\sqrt{z} \cdot \frac{1}{\sqrt{z}} = 1$

b.  $\frac{1}{\sqrt{2}} \cdot \left( \frac{\sqrt{2}}{\sqrt{2}} \right) = \frac{\sqrt{2}}{2}$

7. Which of the following sets of real numbers is closed under division?

- (1)  $\{1\}$
- (2)  $\{\text{all positive integers}\}$
- (3)  $\{0\}$
- (4)  $\{-1\}$