

## Algebra 2: 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

In 2 – 6, name the property of real numbers that is illustrated by the given equation.

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

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

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

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

6.  $\otimes + (\Delta + 0) = (\otimes + \Delta) + 0$

7. Which of the following sets of real numbers is closed under division?
- (1)  $\{1\}$
  - (2)  $\{\text{all positive integers}\}$
  - (3)  $\{0\}$
  - (4)  $\{-1\}$

In 8 and 9, determine under which of the four basic arithmetic operations (addition, subtraction, multiplication, and division) each set is closed.

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

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

10. State whether each number below is *rational* or *irrational*.

a. 0.877777...

d.  $\frac{2}{7}$

g.  $\sqrt{81\pi}$

b.  $\frac{\pi}{2}$

e.  $86.\overline{67}$

h. 3.14159

c. 5.9863

f.  $\sqrt{81}$

i. 9.99999465872194...