Notes Review #1: **Pre-Calculus**

*Interval Notation, Inequality Notation and Graphing on a number line
Changing interval notation to inequality symbols. Draw a graph to represent each example.
[2,5] means $2 \le x \le 5$
[a,b] means $a \le x \le b$
(a, b) means $a < x < b$
[a, b) means $a \le x < b$
(a, b] means $a < x \le b$

$(-\infty, \infty)$ means all real numbers or the entire set of real numbers
$[a, \infty)$ means $x \geq a$
(a, ∞) means $x > a$
$(-\infty, b]$ means $x \le b$
$(-\infty, b)$ means $x < b$

Algebraic Properties

Properties of Algebra to know:

Commutative property of addition and multiplication	a+b = b+a	ab = ba
Associative properties of addition and multiplication	a+ (b+c) = (a+b) + c	a(bc) = (ab)c
Identity property of zero and one	a + 0 = a	1a=a
Inverse properties of zero and one	a + - a = 0	$a \bullet \frac{1}{a} = 1$

Distributive Property a(b + c) = ab + ac a(b – c) = ab – ac

Properties of Inverses

-(-a) = a -a(b) = a(-b) = -(ab) (-a)(-b)= ab (-1)a = -a -(a+b) = -a + -b

Cartesian Plane – rectangular coordinate system
x-axis- the horizontal line
y-axis – the vertical line
origin – the point (0, 0) where the x-axis and the y-axis intersect
ordered pair – (x, y) The location of a point on the plane
x-coordinate – first number in an ordered pair (tells how far left or right to go on the x-axis)
y-coordinate – second number in an ordered pair (tells how far up or down to go on the y-axis)
quadrants: the four sections of a Cartesian plane.

Distance formula $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

Midpoint formula $\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$