

## ALGEBRA II NOTES

### FUNCTION ANALYSIS

**Domain**-The set of all allowable values of the independent variable.

**Range**-The set of all values of the dependent variable.

**Zeroes of a Relation**-The value(s) of independent variable (x) that make the dependent variable (y) equal to zero. *(To find them, let  $y = 0$  and solve for x.)*

**x-intercept**-The point(s) at which a graph intersects the x-axis. *(To find them, let  $y = 0$  and solve for x.)*

**y-intercept**-The point(s) at which a graph intersects the y-axis. *(To find them, let  $x = 0$  and solve for y.)*

**One-to-One Function**-A FUNCTION in which all values of the range have exactly one value of the domain paired with it. *(Horizontal Line Test)*

**Onto Function**-A FUNCTION in which all possible values of the range are in the range. *(For us, that means that the range is all real numbers.)*

**Interval of Increase**-A FUNCTION is increasing on an interval if, for all values  $x_1$  and  $x_2$  on the interval,  $x_1 < x_2$  implies that  $f(x_1) < f(x_2)$ . *(The graph is going up from left to right.)*

**Interval of Decrease**- A FUNCTION is decreasing on an interval if, for all values  $x_1$  and  $x_2$  on the interval,  $x_1 < x_2$  implies that  $f(x_1) > f(x_2)$ . *(The graph is going down from left to right.)*

**Constant Interval**-A FUNCTION is constant on an interval if  $f(x_1) = f(x_2)$  for all values  $x_1$  and  $x_2$  on the interval. *(The graph is horizontal.)*

**Absolute Minimum**-  $f(c)$  is the absolute minimum value of a FUNCTION if  $f(c) \leq f(x)$  for all values of x. *(It is the least value of y over the entire function.)*

**Absolute Maximum**-  $f(c)$  is the absolute maximum value of a FUNCTION if  $f(c) \geq f(x)$  for all values of x. *(It is the greatest value of y over the entire function.)*

**Relative Maximum**-  $f(c)$  is a relative maximum on an interval if  $f(c) \geq f(x)$  for values of x close to c. *(These are the y-values of the "peaks" in a graph.)*

**Relative Minimum**-  $f(c)$  is a relative minimum on an interval if  $f(c) \leq f(x)$  for values of x close to c. *(These are the y-values of the "valleys" in a graph.)*

A FUNCTION is considered **positive** on an interval if  $f(x) > 0$ . *(The graph is above the x-axis.)*

A FUNCTION is considered **negative** on an interval if  $f(x) < 0$ . *(The graph is below the x-axis.)*