**Algebra2 Test Study Notes**

**Unit 2 Linear Functions**

Solving Linear Equations and Inequalities

* Solve for unknown variable in an equation
* Solve for unknown variable in an inequality and graph the solution
* Change the direction of inequality signs when multiplying or dividing by a negative
* Interpret a word problem and solve as necessary

Proportions

* Cross multiply to solve for unknown variables
* Interpret percent and other proportion word problems, solve

Graphing Linear Functions

* Slope Intercept formula: y = mx + b, easiest to graph an equation
* Some equations must be solved for y before graphing
* Vertical lines are in the form x = h
* Horizontal lines are in the form y = k
* Interpret word problems, usually slope is a rate

Writing Linear Functions

* Given a graph, write the equation in slope intercept form
* Utilize point slope form: y – y1 = x – x1
* Given two points, calculate slope, then use point slope form
* Parallel lines have the same slope
* Perpendicular lines have negative reciprocal slopes

Linear Inequalities in Two Variables

* Two variable inequality is represented with shading on a coordinate graph
* Greater than or less thans are dashed lines on the graph
* Greater thans are shaded above the line (when viewing the y-axis)
* Less thans are shaded below the line
* Some equations must be solved for y before graphing
* Interpret word problems and solve

Transforming Linear Functions

* Vertical shift of y = mx + b is y = mx + b + k
* Horizontal shift of y = mx + b is y m(x – h) + b
* Reflection in y-axis is y = m(-x) + b
* Reflection in x-axis is –y = mx + b
* Stretch in vertical direction is y/a = mx + b
* Stretch in horizontal direction is y = m(x/a) + b
* Multiple transformations, complete in order listed

Solving Absolute Value

* Isolate the absolute value, then set up two different equations
* Less than inequalities are “AND” statements, typically a line segment
* Greater than inequalities are “OR” statements, typically two opposing rays
* Solutions could be all real numbers, or no solution

Absolute Value Functions

* “V” shaped graph that transforms the same as other functions

100 point test, no notes are allowed, no formulas are provided

Graphing calculators are not allowed