**Algebra2 Test Study Notes**

**Unit 3 – Systems of Linear Equations**

Systems of Equations

* Graphing of systems
  + Two linear functions are both straight lines
  + If the lines cross once, there is one solution, at the intersection
  + If the lines are parallel, there is no solution
  + If the equations refer to the same line, then it is an identity, and there are infinite solutions
  + Given graph, identify number of solutions
* Substitution
  + Solve system of equations by substituting equation for one variable into other equation
  + You may need to solve for one variable first, or it may be provided
* Elimination
  + Add equations together to eliminate one of the variables
  + Solve the resulting equation for the remaining variable
  + Plug the value of the variable into an original equation and solve for the other variable (the one that was eliminated)
  + If adding (or subtracting) equations does not eliminate a variable, one or both equations may need to be multiplied by a constant, so that when the equations are added a variable is eliminated

Systems of Inequalities

* Graph two inequalities, shading the resulting area that is part of the answer
* Shade above the equation of the line when solved for y, if it is greater than
* Solid lines represent greater (or less ) than and equals to
* Dashed lines represent greater (or less) than

Linear Programming

* Graph a system of equations to find an optimal point, a maximum or a minimum
* Carefully graph all of the constraints
  + The constraints may be given, or may need to be interpreted from a story problem
* Check all vertices of the bounded region for maximums or minimums

Three Variable Systems

* Solved using substitution and elimination as above
* Eliminate one variable from two equations, then the same variable from two different equation, finally solve the resulting equations as above
* Neatness, and labeling your work helps complete three variables

Graphing Calculators may NOT be used on this test