Advanced Precalculus
Test #1: 250 Points
Tuesday 2/07/12

I. Absolute Value Equations
- Watch for multiple absolute values, fractions, and simplifying square roots.

II. Function Basics
- What makes something a function?
- Domain and Range
- Drawing and/or Interpreting Graphs of Functions [inputs / outputs]

III. Functions
- Composition of functions
    - Find $(g \circ f)(x)$ when given $f(x)$ and $g(x)$
    - Evaluate the composition of functions given a graph
- Identify the transformations performed to $y = f(x)$ and transform a graph appropriately.
- Given a point on the graph of $y = f(x)$, find the point on the transformed graph.
- Find Inverse Functions both Algebraically and Graphically

IV. Lines
- Know the review we did on lines (slope-intercept, point-slope, perpendicular, parallel, etc.)
- Know how to find each of these points and verify algebraically that all three lines intersect there:
    - Circumcenter (where perpendicular bisectors intersect)
    - Orthocenter (where altitudes intersect)
    - Centroid (where medians intersect)

V. Parabolas
- Know how to complete the square for a parabola and use it to draw a graph.
- Determine its equation given some combination of its directrix, vertex, and focal point
- Be able to determine its directrix, vertex, and focal point given its equation.

VI. Circles
- Be able to work with the equation of a circle.
  (Complete the square to get it in a form to identify its center and radius.)

VII. Ellipses
- Know how to find the equation of an ellipse given its graph or key properties.
- Given an equation, know how to complete the square to find the standard equation of the ellipse (to identify its center, vertex, and focal points)
- Be able to identify the equation for an ellipse.

VIII. Hyperbolas
- Know how to find the equation of a hyperbola given its graph or key properties.
- Given an equation, know how to complete the square to find the standard equation of the hyperbola (to identify its center, vertices, focal points, and "asymptotes".)
- Be able to identify the equation for a hyperbola.

Anything we have done is fair game! Calculators are <u>NOT</u> permitted!!!
Be prepared, it is designed to take the block (and you will not be granted any extra time.)