Test 4 Preparation

1. The test covers 4.1-4.6, 8.1-8.3, and 8.5.
2. Use the homework, class work, and class examples as a study guide. In other words, any problem from the homework, examples, or class work is fair-game on the exam.
3. Memorize the following:

   a) The definition of logarithm
   b) The Product, Quotient, and Power rules
   c) Change of Base, compound interest, and exponential increase (or decay) formulas.
   d) Parabola with vertex (h, k): $(x-h)^2 = 4p(y-k)$ or $(y-k)^2 = 4p(x-h)$
   e) Ellipse centered at (h, k): $\dfrac{(x-h)^2}{a^2} + \dfrac{(y-k)^2}{b^2} = 1$, $\dfrac{(x-h)^2}{b^2} + \dfrac{(y-k)^2}{a^2} = 1$, and
      $c^2 = a^2 - b^2$

   f) Hyperbola centered at (h, k): $\dfrac{(x-h)^2}{a^2} - \dfrac{(y-k)^2}{b^2} = 1$, $\dfrac{(y-k)^2}{a^2} - \dfrac{(x-h)^2}{b^2} = 1$, and
      $c^2 = a^2 + b^2$
   g) The formulas for conversion between polar and rectangular coordinates.
   h) Any other concept needed to successfully complete the homework.

4. A well-prepared student should be able to...

   a) determine if a function is 1 to 1 using HLT.
   b) find composite and inverse functions. [4.1]
   c) evaluate and graph exponential functions. [4.2]
   d) apply the definition of logarithm. [4.3]
   e) evaluate and graph logarithmic functions. [4.3]
   f) apply the properties of logarithms. [4.3, 4.4]
   g) solve exponential equations and logarithmic equations. [4.5]
   h) solve applications of exponential functions. [4.6]
   i) find the equation of a parabola, ellipse, and hyperbola, given certain relevant information. [8.1, 8.2, 8.3]
   j) find the focus, directrix, and vertex of a parabola given the equation of the parabola. [8.1]
   k) find the vertices and foci of an ellipse and hyperbola given certain relevant information. [8.2, 8.3]
   l) graph conic sections [8.1,8.2, 8.3]
   m) solve applications of conic sections. [8.1, 8.2, 8.3]
   n) find the equation of the asymptotes of a hyperbola. [8.3]
   o) graph polar equations by hand and on the calculator. [8.5]
   p) convert between polar and rectangular coordinates. [8.5]
   q) convert between polar and rectangular equations. [8.5]
   r) solve homework-type problems.