MA-161 (F,07)
Information & Formulas
For Test 3

Read (and follow) these instructions!

GENERAL INSTRUCTIONS: Except where indicated, do the problems on the paper provided.

Use one sheet of paper for each problem.

Show your work neatly and logically for all problems. You work will be graded.

For the optimization and related rates problems, define any variables that you introduce that have not been explicitly defined in the problem. Answer questions in sentences, including units of measurement. Use calculus on all problems.

Note: If you need help solving an equation, you may ask me after you've simplified the equation as much as you can. Possibly I'll help you for some points off. Also, **if you need a formula**, ask me and, if it's not too basic, I'll give it to you

Draw the graph for Problem 3 on the coordinate system that I've provided. Include a graphing summary on that paper.

Here are some of the derivative rules we derived: Assuming u is a function of x,

$$\frac{d}{dx}(u^n) = n\cdot u^{n-1}\frac{du}{dx} \qquad \frac{d}{dx}(\sin u) = \cos u\frac{du}{dx} \qquad \frac{d}{dx}(\cos u) = -\sin u\frac{du}{dx} \qquad \frac{d}{dx}(\tan u) = \sec^2 u\frac{du}{dx}$$

$$\frac{d}{dx}(e^u) = e^u\frac{du}{dx} \qquad \frac{d}{dx}(\ln u) = \frac{1}{u}\cdot\frac{du}{dx} \qquad \frac{d}{dx}(\sin^{-1}u) = \frac{1}{\sqrt{1-u^2}}\frac{du}{dx} \qquad \frac{d}{dx}(\arctan u) = \frac{1}{1+u^2}\frac{du}{dx}$$

PLEASE: DO NOT FORGET TO USE THE CHAIN RULE, THE PRODUCT RULE, THE QUOTIENT RULE, ETC. WHEN THEY APPLY!