Warm-up Problems - February 3, 2006

1. Exam items:
   (a) Derivatives - taking derivatives, meaning of derivative
   (b) Integration:
      i. Meaning if integration
      ii. Substitution
      iii. Parts
      iv. Definite integrals, fundamental theorem, Riemann sums
   (c) Area between curves, Gini index
   (d) Probability density functions
   (e) Income streams (total income, future value, present value, interest earned)
   (f) Functions of several variables, cross-sections.
2. What is the difference between the graphs of $z = x^2 + y^2$ and $z = 2x^2 + 9y^2$?

Lecture Problems

3. A company spends $\$x$ in labor and $\$y$ in capital (both in thousands of dollars) and the company's production is $f(x, y) = \frac{1}{1000}x^2y^3$ (number of units produced). Find the following and write a sentence explaining the meaning of what you found.
   (a) $f(10, 20)$
   (b) $\frac{\partial f}{\partial x}(10, 20)$
   (c) $f_y(10, 20)$