Warm-up Problems - January 23, 2006

1. Graph the functions $y = x^2 - 1$ and $y = -x + 1$. Determine the points of intersection of these curves.

2. Compute the integrals:

   (a) $\int_0^1 x \, dx$

   (b) $2\int_0^1 x - x^2 \, dx$

   (c) $2\int_0^1 x - x^3 \, dx$

Lecture Problems

3. A certain country has a Lorenz curve $f(x) = x^{2.5}$. An economist proposes sweeping reform to provide a more equitable distribution of income. This economist projects that his reforms will result in a Lorenz curve of $g(x) = 0.4x + 0.6x^7$.

   (a) Are these valid Lorenz curves?

   (b) Compute the Gini index for each curve.

   (c) Is the ecnomist correct?