Name: _____   **Math 1030 Quiz #5** (July 31ˢᵗ, 2013)

You may **skip ONE** of the following problems.

1. We have the following supply and demand functions:
$$p_s(x) = 30\ln(x+1) + 20 \qquad \text{and} \qquad p_d(x) = -0.1x^3 + 0.5x^2 - 2x + 150.$$

   Market equilibrium $(q_E, p_E) =$ _____

   The consumer surplus is $ _____

   I used the following ALPHA commands...

2. Southern Freedonia has determined that their Lorentz curve is given by $L(x) = \dfrac{e^{x^2} - 1}{e - 1}$.

   The poorest _____ percent of the population receives 10% of the income.

   Southern Freedonia's Gini Index is _____.

   I used the following ALPHA commands...

3. We know that $P'(q) = -4q^3 + 30q^2 + 50$ for some profit function $P(q)$. In addition, we also know that $q = 10$ is a break even quantity for $P(q)$.

   $P(q) =$ _____

   I used the following ALPHA commands...