Economics 11  
Caltech Spring 2010  
Quiz 1

Following the Honor code, you should find 20 minutes and do the quiz, by yourself and without using any notes. Paper and pen should be all you need. Turn it in by Thursday 4-7 5pm. (drop off in box in front of Baxter 133). It will include one question from each section. Each quiz is worth 6pts (for 48 out of 200 possible pts for all 8 quizzes).

The answers to the whole homework will be available Friday at 2pm.

Definitions
3 lines or less
1pt Please explain Opportunity cost

The value of the best forgone alternative

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Word problem
2pts Explain why gas is inelastic on the short term and elastic on the long term

In the short run the quantity of gas consumers consume does not change much as price fluctuates

because people cannot immediately change their driving behavior (e.g. commute to school and work, the fuel efficiency of their vehicles). However, on the long run, consumers can adopt more fuel efficient cars, car pool, and public transportation to accommodate for change in gas prices

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Technical problem
3 pts
Suppose the supply curve for burgers is \( p(q) = 0.5q^2 \) and the demand curve for burgers is \( p(q) = 80 - q \). What is the equilibrium price and quantity of burgers? Compute the demand elasticity at \( q = 10 \).

Equilibrium requires \( p_s(q) = p_d(q) \iff 0.5q^2 = 80 - q \iff 0.5q^2 + q = 80 \)

\[
q=1 \Rightarrow 0.5q^2 + q = 2 \quad q=4 \Rightarrow 0.5q^2 + q = 12 \quad q=10 \Rightarrow 0.5q^2 + q = 60 \quad q=12 \Rightarrow 0.5q^2 + q = 84
\]

\[ q=11.69 \Rightarrow 0.5q^2 + q = 80. \quad p = 80 - q = 80 - 11.69 = \$68.31 \]

Compute the demand elasticity at \( q = 10 \).

\[
e_s = -\frac{\Delta Q}{\Delta P} \cdot \frac{P}{Q} = -1 \cdot \frac{70}{10} = 7
\]