



Instructions: Open book, open notes, no collaboration.
Partial credit will be assigned. Please show your work.
You may take this test during any consecutive 4 hour period.

Due February 7, by 5:00 PM. Please deposit in Box outside Baxter 100.

- The demand for hamburgers has a constant elasticity of 1 of the form $x(p) = 8,000 p^{-1}$. Each entrant in this competitive industry has a fixed cost of \$2,000 and produces \sqrt{x} hamburgers per year, where x is the amount of meat in pounds.
 - If the price of meat is \$2/lbs, what is the long run supply of hamburgers?
 - Compute the equilibrium number of firms, quantity supplied by each firm and the market price of hamburgers.
 - Find the short run industry supply, does it have constant elasticity?
- A recent college graduate wants to retire 30 years from today, and would like to spend \$20,000 during the first year of his retirement, in today's terms. Suppose his annual retirement expenditure increases 3% every year. If he lives forever, how much should he save each year leading up to his retirement? Assume a 5% return on investments.
- A toy factory costs \$2 million to construct and the marginal cost of the q^{th} toy is $\text{Max}[10, q^2/1,000]$.
 - What are average total costs?
 - What is short run supply?
 - What is the long run competitive supply of toys?
- Give a brief summary of Ricardian theory. If it holds true, what kinds of goods should the US export and what should it import? How well does the theory hold up?
- A company that produces software needs two inputs, programmers (x) at a rate of p and computers (y) at a price of r . The output is given by $T = 4 x^{1/3} y^{1/3}$, measured in pages of code.
 - What is marginal cost?
 - Now suppose each programmer needs two computers to do his job, what ratio of p and r would make this input mix optimal?
- Suppose the price of Microsoft's operating system increases. Explain how this might affect the price and quantity of Intel microprocessor chips.