

Problem Set 1, Econ 2100
Fall 2009

1. For each long-distance call anywhere in the continental United States, a new phone service will charge users 30 cents per minute for the first 2 minutes and 2 cents per minute for additional minutes in each call. Tom's current phone service charges 10 cents per minute for all calls, and his calls are never shorter than 7 minutes. If Tom's dorm switches to the new phone service, what will happen to the average length of his calls?
2. Tom is a mushroom farmer. He invests all his spare cash in additional mushrooms, which grow on otherwise useless land behind his barn. The mushrooms double in weight during their first year, after which time they are harvested and sold at a constant price per pound. Tom's friend Dick asks Tom for a loan of \$200, which he promises to repay after 1 year. How much interest will Dick have to pay Tom in order for Tom to recover his opportunity cost of making the loan? Explain briefly.
3. The meal plan at university A lets students eat as much as they like for a fixed fee of \$500 per semester. The average student there eats 250 pounds of food per semester. University B charges \$500 for a book of meal tickets that entitles the student to eat 250 pounds of food per semester. If the student eats more than 250 pounds, he or she pays \$2 for each additional pound; if the student eats less, he or she gets a \$2 per pound refund. If students are rational, at which university will average food consumption be higher? Explain briefly.
4. Toby can produce 5 gallons of apple cider or 2.5 ounces of feta cheese per hour. Kyle can produce 3 gallons of apple cider or 1.5 ounces of feta cheese per hour. Can Toby and Kyle benefit from specialization and trade? Explain.
5. Nancy and Bill are auto mechanics. Nancy takes 4 hours to replace a clutch and 2 hours to replace a set of brakes. Bill takes 6 hours to replace a clutch and 2 hours to replace a set of brakes. State whether anyone has an absolute advantage at either task and, for each task, identify who has a comparative advantage.
6. Consider a society consisting only of Helen, who allocates her time between sewing dresses and baking bread. Each hour she devotes to sewing dresses yields 4 dresses, and each hour she devotes to baking bread yields 8 loaves of bread. If Helen works a total of 8 hours per day, graph her production possibilities curve.