1. Consider the market for airplane travel (say, the price and quantity of a “typical” ticket). The price of jet fuel, which is an important input into the production of air travel, has fallen sharply.
   a. Before the fall in the price of jet fuel, airline “load factors” (that is, the fraction of seats that are full) were quite high, and it takes years to build new airplanes and new airports. Would you expect these factors to cause the supply of air travel to be highly elastic or highly inelastic (with respect to price) in the near term?
   b. Given your answer to part (a), how would you expect the fall in the price of jet fuel to affect the equilibrium price and quantity of air travel? (For simplicity, assume that the demand for air travel is neither particularly elastic nor particularly inelastic in the relevant range.)

2. In recent years, the government has started to subsidize the installation of solar panels. Suppose the subsidy takes the form that customers are sent a check by the government for a certain amount for each solar panel installed. (That is, you can think of the subsidy as a negative tax physically paid to consumers.) Since there are many small firms that install panels, we can think of this market as perfectly competitive. For simplicity, assume that before the introduction of the subsidy, the market was in long-run equilibrium.
   a. What effect, if any, will the introduction of the subsidy have on the market demand and supply curves for solar panel installation? What will be the short-run effect of the subsidy on the number of panels installed, the price received by sellers, and the price paid by buyers?
   b. Explain whether you agree or disagree with the following statement: “Even though the subsidy is paid to customers, customers and firms share the subsidy.”
   c. Show in your supply and demand diagram the total amount that the government spends on the subsidy. Is this amount more, less, or equal to the equilibrium quantity before the introduction of the subsidy times the subsidy per panel (or is it not possible to tell)?
   d. What does the subsidy do to the quantity of installations and the profits of a typical installation firm in the short run?
   e. What will happen to the equilibrium price and quantity in the long run? Why? What will happen to the profits of a typical installation firm in the long run?

3. Consider a household’s choice between restaurant meals and everything else.
   a. Draw the household’s budget constraint, with restaurant meals on the vertical axis and everything else on the horizontal axis. In terms of the household’s income and the prices of restaurant meals and everything else, where are the vertical intercept, the horizontal intercept, and the slope of the budget constraint?
   b. Suppose that an influx of new chefs into the area causes the price of restaurant meals
to fall. How will the household need to modify its consumption of restaurant meals and everything else to continue maximizing its utility? (Be sure to discuss both the substitution effect and the income effect of the price decline.)

c. If the marginal utility of restaurant meals declines rapidly as the household consumes more of them, is the quantity of restaurant meals demanded by the household likely to respond a lot or a little to the fall in price?

4. Describe how each of the following developments would affect the amount produced by a competitive firm in the short run:
   a. The price of an input rises.
   b. The demand curve for the product it produces shifts out.
   c. The government levies a tax on each firm in the industry that does not depend on the amount the firm produces.

5. For each of the following decide whether the statement is true, false, or uncertain and explain why. Your explanation is the important part of the answer.
   a. Bad weather that destroys much of the French wine grape crop is likely to lead to a movement along the demand curve for French wine, but to a shift of the demand curve for California wine.
   b. The total utility that a household gets from food clearly exceeds the total utility that it gets from vacations (since food is necessary for survival); thus, to maximize its utility, the household should spend more on food than on vacations.
   c. A competitive firm maximizes profits by producing at the point where the difference between price and marginal cost is as large as possible.