ECON 201, Prof. Hogendorn: Review Problem Set #3A

1. The Jones family spends all its income, m, on food, F, and shelter, S. It derives maximum utility when it spends two-thirds of its income on shelter and one-third on food. The price of food is p_F and the price of shelter is p_S.

   (a) Write the demand functions for food and shelter. Hint: work backward from the budget constraint.
   (b) What is the slope of the food Engel curve?
   (c) Is food a substitute for shelter?

2. Scott's demand function for chocolate chip cookies is $10 + \frac{M}{20P}$; M=income and P=price per cookie.

   (a) Assume Scott's income is $1000 per month and the price of a cookie is $1. Graph Scott's demand curve. How many cookies does Scott consume per month? Graph Scott's Engel curve.
   (b) The price rises to $5 per cookie. Now how many cookies does Scott consume? How much of this change in consumption is attributable to the substitution effect of the price change? How much is attributable to the income effect of the price change?
   (c) Scott complains to the manager about this price rise, so the cookie company gives Scott a rebate because he is such a loyal customer. The rebate is the fixed amount of $80 per month. Can we tell if Scott is now better, the same, or worse off than in (a)?
   (d) Instead of the rebate, the manager decides to charge Scott $1 per cookie, but puts a limit of 12 on the number of cookies he can buy. Is Scott better, the same, or worse off than in (c)?

3. A family in Maine consumes fish, F, and potatoes, T. They have a weekly food budget of $100. If fish costs $p_F = $5 per pound and potatos cost $p_T = $2 per pound, they choose to consume 10 pounds of fish and 25 pounds of potatoes each week. The family's utility function is

$$u(F, P) = F^a T^{1-a}$$

   (a) What is a?
   (b) Suppose the price of fish falls to $4 per pound. What are the new amounts of fish and potatoes consumed?
   (c) What is the Slutsky substitution effect on the amount of fish consumed as a result of the price change?
   (d) What is the Hicks substitution effect on the amount of fish consumed as a result of the price change?

4. Is the following statement true or false? Explain. "Every Giffen good must be inferior, but not every inferior good is a Giffen good."