Problem Set 1

The Ricardian Model

1. Which of the following characterize the Ricardian Model?
   a. Perfect mobility of factors across industries
   b. Perfect mobility of factors across countries
   c. Constant returns to scale
   d. The law of diminishing returns
   e. Identical technologies across industries
   f. Identical technologies across countries
   g. Cournot competition
   h. Perfect competition

2. Suppose that a small open economy has 200 workers and that its technology requires 1 worker-hour per unit of food and 3 worker-hours per unit of cloth. In autarky, it employs 100 workers in each of the two industries. With free trade, it faces world prices of $10 per unit of food and $20 per unit of cloth.
   a. Suppose that in autarky, workers in both industries are paid $8 per hour. What are the autarky prices of food and cloth?
   b. When the country opens to free trade, under the normal assumptions of the Ricardian model, what will it produce, import, and export? From the information given, can you determine the quantities of any of these? What is the country's national income with trade, measured in dollars?
   c. Suppose, contrary to the normal Ricardian Model assumptions, that when trade is opened, workers are unwilling or unable to change occupations, so that we continue to have 100 workers in each industry. What, then, is the national income of the country, in dollars, and how does it compare to the national income you got in part (b) when workers were mobile?
   d. What are the wages of the two groups of workers in part (c)?
   e. [This should be challenging.] Do you think that the country gains from trade in part (c)? Who gains and who loses within it?

3. Using the same assumptions at the start of problem 2, but returning to the usual assumption that labor can move between industries, suppose that the wage of labor in the country in autarky were $15 per hour instead of $8.
   a. Now what would be the autarky prices of food and cloth?
   b. When the country opens to free trade, what will happen? How will your answers to part (b) of problem 2 be changed?
   c. What is the wage of labor with free trade, in dollars?
   d. What has happened, as a result of trade, to the real wages of labor?

4. Use the 2-country Ricardian Model with free trade to work out the effects of the following changes (one at a time) on the Home country's terms of trade and welfare. Assume that the Home country has a comparative advantage in Food, and that in the initial equilibrium, both countries specialize completely. You may assume, if it is helpful, that preferences are identical and homothetic in the two countries.
   a. An increase in the Foreign labor force.
   b. A decrease, of the same percentage in both industries, in the Home country's unit labor requirements for producing both Food and Cloth.
   c. A decrease, of the same percentage in both countries, in the unit labor requirements for producing Cloth.

5. [This is short, but it may be challenging.] The assumptions of the Ricardian Model include balanced trade. However, this assumption does not appear explicitly in any of the steps we took to solve the model. What is it that assures that trade is in fact balanced in the equilibria that we look at?