ASSIGNMENT 1

Answers to this assignment are due back by Wednesday, January 27, 2016.

1. **Shifting Curves**

Use basic demand and supply diagrams to aid your explanation of each of the following.

a. Why is the price of tomatoes lower in August than in February?

b. Why is the price of computers falling over time? [Aside: Moore's law: the power of computers doubles every 18 months.]

c. Why does an increase in the Boston property tax not increase the price of land?

d. Why is the price of gasoline much cheaper than a year ago? [You may need to look up a bit of background information on this one. Tell a story!]

2. **Diamonds vs. Water**

In *An Inquiry into the Nature and Causes of the Wealth of Nations*, Adam Smith writes: “Nothing is more useful than water: but it will purchase scarcely anything; scarcely anything can be had in exchange for it. A diamond, on the contrary, has scarcely any use-value; but a very great quantity of other goods may frequently be had in exchange for it.” Explain this “diamond-water paradox” using demand and supply curves.

3. **Commodity Price Stabilization**

In the 1970s, there was serious concern about the instability of commodity prices. One of the planks of the then-fashionable *New International Economic Order* was that efforts should be made to stabilize the prices of goods. Consider the following scheme: When the price of rubber is low, an international rubber marketing board (IRMB) would buy up rubber at some reference price and store it; when the price of rubber is above the reference price, the IRMB would sell rubber from its stock.

Use demand and supply diagrams to show that if the price fluctuations are due to variations in demand, this price stabilization will help rubber farmers, but if the price fluctuations are due to variations in supply (i.e. some years there is a good harvest, in other years there is not), then the price stabilization scheme will hurt rubber farmers. [Hint: (i) Draw a supply curve, high and low demand curves, and an average (reference) price, and show what happens to farm revenues. (ii) Draw a demand curve, high and low supply curves, and a reference price.]

4. **Solving for Demand and Supply**

The demand for carrots is given by $Q_d = 40 - 4P$ while the supply is given by $Q_s = 4P - 8$.

(i)  Graph these curves, and solve for equilibrium price and quantity.

(ii) New research shows the health benefits of carrots, so the demand shifts to $Q_d = 48 - 4P$.

   Graph the new demand curve and compute the new equilibrium values of $P$ and $Q$. 
5. PPF and Trade

An economy has a production possibility frontier given by \( X^2 + 4Y^2 = 100 \).

(i) Graph this ppf.

(ii) Calculate the opportunity cost of an extra unit of good X when
a. \( X = 2 \)
   b. \( X = 8 \).
   [Hint: you need \( \Delta Y/\Delta X \); either use calculus; or calculate Y when X=2 and X=3 to get an approximation. Excel might be helpful for this.]

(iii) If consumers want to consume equal amounts of X and Y, how much of each should be produced?

(iv) Now the country can trade. It produces only X, and for every unit of X that it ships abroad it gets one unit of Y in return. Graph this consumption possibility curve.

(v) Given that the country can trade on these terms, and that consumers still want to consume equal quantities of X and Y, how much X and Y will they consume?

(vi) How much does this country benefit by being able to trade?

6. English Auction

You want to sell your old computer on E-Bay. You think that there may be as many as three bidders who would be interested in your machine. Although you are not sure how much they value your computer, you believe that each potential bidder may equally well value it at $50, $80, or $90. The bid increment is $1. Should you set a reservation price, and if so, what should it be?

[Hint: Calculate the expected return without a reservation price, and then with different possible reservation prices. You might want to set this up on Excel.]