Please write answers in ink, but draw graphs or do math calculations in pencil. You must show your work on the present value problems to receive full credit. Using a straight edge, draw graphs large enough so that you clearly indicate changes in prices, costs, and quantities. Allocate your time efficiently.

1. Calculate values for the following problems. You must show your work.

   a. You invest $550 today. At the end of one year you will get back $605. What is the implied, or effective, rate of interest?

   b. You invest $240 today. At the end of one year you will get back $252. What is the implied, or effective, rate of interest?

   c. How much will $1000 grow to in three years at 7% compounded annually?

   d. What present amount is equivalent to $1000 paid at the end of each of the next four years at 5% interest?

   e. You win $40 million in the lottery. You receive 20 equal, annual payments of $2 million. You receive the first annual payment when you present the lottery ticket. What is the present value of your winnings if you discount the future payments at a five percent interest rate.

2. In June 1985, the U.S. Department of Agriculture announced its decision to end controls on hops production. In 1966, each hops grower in business at the time had been assigned a share of the total amount of hops that could be sold. Ever since, new hops farmers have had to purchase or lease allotments from existing growers, at a considerable price. The Agriculture Department, in announcing its decision to terminate the system, objected to the fact that new growers had to pay for an allotment that had been given to the original growers at no charge. Explain why the allotments sold for a “considerable price.” If the allotments had not acquired any value after 1966, what would this imply about the original decision to restrict hops production?

3. Illustrate the effect of a price ceiling on gasoline that is below the market-clearing price. Assume that gasoline is rationed to consumers on a first-come, first-served basis. Indicate on your graph the quantity of gasoline exchanged, the money price per gallon, the transaction costs per gallon, and the full price per gallon that consumers pay by waiting in line. Also, indicate the total deadweight loss (the loss in the gains from exchange) that is created by the government-mandated price ceiling.

4. Explain the difference between price takers and price searchers. What type of firm qualifies as a price taker? A price searcher? Two business are located next to Wofford: the Wayside Gardens florist and the Krispy Kreme franchise. Is either one of these a monopolist? Why or why not? If neither is a monopolist, then what other description would apply? Explain.