Finance 30220
Problem Set #5

1) Consider a 180 day T-Bill with $1,000 of face value.
    a) If the purchase price of this T-Bill is $994, calculate the bond equivalent yield.
    b) Suppose that you require at least a 3% annualized yield on this bond. What is the maximum price that you would be willing to pay?

2) Suppose that you are currently a college senior. You are currently working a part-time job that pays $2,000 per year, but you expect to earn $20,000 next year, after you graduate. Assume that there is no inflation and that the interest rate is 10% per year.

    a) Sketch your budget line for current and future expenditures. Indicate on your graph a likely consumption choice.
    b) Suppose that the interest rate suddenly increased to 15%. Show the effect of the rise in the interest rate on your budget set. Indicate a new consumption choice on your graph. Explain the reasoning behind your choice. What happens to your savings?
    c) Suppose you receive an unexpected inheritance from a long lost Aunt of $3000. What happens to your current consumption? What happens to your savings? How would your answer change if you didn't expect to receive this inheritance until next year?

3) Suppose you have the following information for the production of shirts.

# of Sewing Machines	# of Shirts (per year)
1	100
2	190
3	270
4	340
5	400
6	450
7	490
8	520
9	540
10	550

The price of a shirt is $2, and the price of a sewing machine is $1000. The real interest rate is 5% per year, and sewing machines depreciate at 5% per year.

    a) Calculate the value marginal product of capital (the dollar value of MPK) for sewing machines.

b) Calculate the user cost of sewing machines.
c) How many sewing machines should the firm purchase?

4) Certain government regulations tend to reduce the productivity of capital. Show the effects on savings, investment, and the interest rate of the following plans for de-regulation.

a) A *temporary* easing of regulations.
b) A *permanent* easing of regulations

5) Suppose that we have the following yield curve.

Term	Rate
1yr	5%
2yr	5.5%
3yr	6%

a) Calculate the implied forward rates.
b) During the early 1980's, real interest rates were consistently negative. Remember that a negative real interest rate implies that lenders are being repaid with less purchasing power than they initially loaned out. Why would a lender ever agree to a negative real rate of return?