1. Suppose you manage the Northwestern endowment. You have invested in $10m worth of French government bonds. When Moody's credit rating agency downgraded French government debt yesterday their yields went up one percentage point. What effect did this have on your investment? Below is a table of the amount you had invested in various bonds.

Worth*	Yield*	Maturity	Coupon Rate	Coupon Freq.
3m	3.5%	50y	3.5%	semiannual
2m	3.2%	30y	3.2%	semiannual
1m	3.0%	10y	3.0%	semiannual
1m	2.8%	5y	2.8%	semiannual
2m	2.6%	1y		none
1m	2.5%	6mo		none

*Before downgrade

2. Suppose you bought at par $1m worth of 5-year Greek government bonds paying quarterly coupons at a 7% yield. How much money do you lose if in restructuring its debt, the Greek government replaces these bonds by 10-year bonds with the same face value but paying no coupons?

3. A callable bond is one that the issuer can redeem at a fixed price (in other words, a bond with an embedded call option). Suppose your company issued callable bonds with 10 years remaining until maturity, $1000 face value, and 6% quarterly coupons that the company can buy back for $1050 each. At what yields (today) is it optimal for the company to call the bonds (i.e., cheaper to call the bonds than to buy them in the market)? Describe how mortgage-backed bonds have a similar feature.

4. You are a big bank and own many Greek government bonds (that and a lot of mortgages). Each Greek bond will pay $2.00 at the end of every quarter for 1 year (4 quarters). At the end of 1 year, each bond will also pay back the principal of $100. You have a 3% discount rate compounded quarterly.
a) If you are sure that the Greek government won't default, then at what yields are willing to sell these bonds?
b) Suppose that you believe there is a 50% probability that Greece will default before it makes all its bond payments. You assume that if Greece defaults, then it is equally likely to happen just before each of the four payments. If it defaults, then you believe that Greece will not make any subsequent coupon payments and only pay you $30 at maturity (i.e., a 70% "haircut" on the principal on the bond). At what yields are willing to sell these bonds?

5. Consider the historical yield curves in the associated spreadsheet.
a) Consider an investor who always bought newly-issued 10 year Treasury notes at face value and then sold them after six months (after collecting the first coupon payment) to buy the new ones. Assume the yield of the 9.5-year bonds is the same as that of 10-year bonds. Assuming the investor started with $1000. What would his annual rate of return

be if he followed this strategy for seven years starting in 2004? Suppose the investor had to sell and stop at the worst possible moment, mid-way through 2006 when 10-year yields reached 5.09%. What would his annual rate of return (from when he started until when he sold) be then?

b) Compare this to the rate of return of an investor who only bought newly-issued 6-month T-bills, which pay no coupons.