

**Problem Set 4 for Economics 180.367:
Investments and Portfolio Management
Due at the beginning of class on October 21.**

Note: Point totals are shown at the beginning of each question. It is important to show your work.

1. (10 pts) Suppose that an individual has a utility function $U = \frac{e^{\Delta W}}{1 + e^{\Delta W}}$ where ΔW denotes his/her change in wealth and $e = 2.718$.

- (a) Consider the choice between losing \$1 for sure and a gamble with a 50% chance of losing \$2 and a 50% chance of losing nothing. Which will this individual choose, and why?
- (b) Consider the choice between gaining \$1 for sure and a gamble with a 50% chance of gaining \$2 and a 50% chance of gaining nothing. Which will this individual choose?
- (c) What behavioral phenomenon is being exhibited in (a) and (b)?

2. (10 pts) A common stock pays an annual dividend of \$2.10. The risk-free rate is 7 percent and the risk premium for this stock is 4%. (so the required returns are 11%) If the annual dividend is expected to remain at \$2.10 forever, what is the intrinsic value of the stock price?

3. (10 pts) The required returns of XYZ electronics is 6% per year, and its dividends are expected to grow at a 1% annual rate. If XYZ's annual dividends this year were \$ 1 per share, compute the intrinsic value of XYZ's stock price.

4. (20 pts) Blob enterprises and Gob enterprises are lawn mower distributors. Blob sells its lawn mowers in New York City, while Gob sells mowers in Northern Virginia. Assume that required rates of return are determined by the CAPM, and that Blob and Gob both have a beta = 1.4. The risk free rate is 2 percent, and the market risk premium is 5 percent. The expected dividends for both Blob and Gob next year is 1 dollar per share, but Blob has a ratio of price to expected dividends of 10/9, while the ratio for Gob is 40/9. Based on this information, solve for the expected dividend growth of each firm and comment on the growth prospects of the two firms.

5. (20 pts) Suppose that the yield on a one year zero coupon bond is 5%, and the one year forward rates ending two and three years hence are 7% and 8%, respectively. Suppose also that there is a \$100 bond with a maturity of three years and a coupon of 6% per year paid annually. All interest rates are with annual compounding.

- (a) What is the yield on two and three year zero coupon bonds?
- (b) What is the price of the coupon bond?
- (c) Find the yield to maturity of the coupon bond.

6. (20 pts) Using Bloomberg, suppose that you had bought the 11.25% February 15, 2015 Treasury bond on 2/15/2011 and sold it on 8/15/2011. What would your holding period return have been?

7. (10 pts) Using Bloomberg, suppose that you had bought the 4% February 15, 2015 Treasury note on 9/14/2011. What would the *dirty* price of this have been (in decimal form)?