COR1-GB.2311 FOUNDATIONS OF FINANCE
Spring 2017
**Problem Set #3**

This problem set is due in class on **Monday, April 17.** You may collaborate with your classmates in preparing the solutions, but each student must hand in a separate assignment. If you do receive help or work with another student on the assignment, you must note this fact at the beginning of your solutions. Please remember to put your name at the top of the first page. Also, please staple your assignment if there are multiple pages and put your name on every page. **Assignments that are late but within 24 hours of the deadline, will receive ½ credit. After 24 hours no assignments will be accepted!**

1. XYZ Inc. has expected earnings over the next year of $2/share ($E_1 = 2$). The company is expected to maintain an earnings retention rate of 40%, i.e., 60% of earnings are expected to be paid out as dividends every year. The company has a beta of 2, the risk-free rate is 4%, and the market risk premium is also 4%.
    a. If the growth rate in earnings is expected to be 4% in perpetuity
        i. What is the value of the stock?
        ii. What is the expected price a year from now?
        iii. What is the expected holding period return over the next year? How much of this return is due to capital gains (price appreciation) and how much is attributable to dividend yield?
        iv. What ROE justifies this growth rate?
        v. What is the present value of growth opportunities for this stock?
    b. If the ROE is expected to be 15% in perpetuity
        i. What is the implied growth rate?
        ii. What is the value of the stock?
        iii. What is the present value of growth opportunities?
    c. If the current price of the stock is $18/share
        i. What is the implied growth rate?
        ii. What is the implied ROE?
        iii. What is the present value of growth opportunities?

Excel exercises
This problem is to be completed in Excel. Please print out and hand in a copy of the Excel spreadsheet. (Note that the problems above can also be done in Excel. However, the following problem MUST be done in Excel.)

2. XYZ Inc. is expected to pay no dividends for the next 5 years. However, at the end of the sixth year (at time 6), the company is expected to pay a dividend of $1/share. Dividends are expected to grow at 10% per year for the following 9 years (through the end of the $15^{th}$ year, i.e., time 15), then to grow at 5% every year thereafter (forever). Assume the appropriate discount rate (required return) is 10%.
    a. What is the expected value of the stock at time 15?
    b. What is the expected value of the stock at time 5?
    c. What is the value of the stock today?