1. You are given the following two equations:

\[ E(R_i) = R_f + (E(R_M) - R_f)\beta_i \]  
\[ E(R_p) = R_f + \left( \frac{E(R_M) - R_f}{\sigma_M} \right) \sigma_p \]  

You also have the following information: \( E(R_M) = .15, \ R_f = .06, \sigma_M = .15 \). Answer the following questions, assuming that the capital asset pricing model is correct:

(a) Which equation would you use to determine the expected return on an individual security with a standard deviation of returns = .5 and a \( \beta = 2 \)? Given the parameters above, what is the expected return for that security?

(b) Which equation would you use to determine the expected return on a portfolio knowing that it is an efficient portfolio (consisting of the market portfolio \( M \) combined with the risk-free rate)? If you were told that the standard deviation of returns on that portfolio is equal to \( \sigma_M \) and you were given the above parameters, what is the expected return on that portfolio?

(c) Can you determine the \( \beta \) of the portfolio in (b)?

(d) Given your answers above, expand on what type of risky assets equation (1) can be used for, and what type of risky assets equation (2) can be used for.

2. Suppose that the consensus forecast of security analysts of your favorite company is that earnings next year will be \( E_1 = $5.00 \) per share. Suppose that the company tends to plow back 50% of its earnings and pay the rest as dividends. If the Chief Financial Officer (CFO) estimates that the company’s growth rate will be 8% from now onwards, answer the following questions.

(a) If your estimate of the company’s required rate of return on its stock is 10%, what is the equilibrium price of the stock?

(b) Suppose you observe that the stock is selling for $50.00 per share, and that this is the best estimate of its equilibrium price. What would you conclude about either (i) your estimate of the stock’s required rate of return; or (ii) the CFO’s estimate of the company’s future growth rate?

(c) Suppose your own 10% estimate of the stock’s required rate of return is shared by the rest of the market. What does the market price of $50.00 per share imply about the market’s estimate of the company’s growth rate?