Question 1: Philip Morris stock recently paid a dividend of $1.00 per share \((D_0 = \$1)\). The company has a constant dividend growth rate of 4\% and a beta equal to 1.2. The required rate of return on the market is \(r_M = 13\%\) and the risk-free rate is \(r_{RF} = 6\%\).

A) (10 Points) What should be the company’s stock price according to the constant dividend growth rate model?

b) (15 points) The company is considering a change of policy which will increase its beta to 1.5. If market conditions remain unchanged, what new constant dividend growth rate will cause the stock price of Philip Morris to remain unchanged?
Question 2 (20 points) IBM recently issued 10 year bonds at a price of $1000. These bonds pay $70 interest every 6 months. Their price remained stable since they were issued, i.e., they still sell at par. Due to additional financing needs, the company wants to issue new bonds with a maturity of 5 years, a par value of $1000 and pay $90 interest every 6 months. If the investors require the same annual rate of return as they require from the existing bonds, what would be the value of the new bonds?
Question 3 (20 points) Assume that you are considering the purchase of a $1000 par value bond that pays a coupon of $90 \textit{every six months} and has 8 \textit{years to go before it matures}. If you buy this bond, you expect to \textit{hold it for three years} and sell it in the market. You expect the market to require an \textit{annual} rate of 16\% when you sell the bond. \textbf{What will be the value of the bond when you sell it at the end of three years.}
Question 4 (20 points) A portfolio manager has a $200,000 portfolio with a beta of 2. Assume that the return on the market is $r_M = 10\%$ and the risk-free rate is $r_{RF} = 5\%$. The manager wants to invest some additional funds in some new stock with a beta 4, so that the new portfolio will have a required rate of return of 20\%. What is the amount that the manager should invest in the new stock with $\beta = 4$ so that the new portfolio will have a required rate of return of 20\%?
Question 5: True or False (3 points each)

- Any change in beta is likely to affect the required rate of return on a security, which implies that a change in beta is likely to have an impact on the security’s price.

- When a firm makes bad managerial judgements, or has unforeseen negative events happen to it that affect its returns, these random events are unpredictable and cannot be diversified away by the investor. This is called the market risk.

- If a bond is trading at a value higher than par value of $1000, this implies that investors require a higher annual rate of return than the bond’s annual coupon rate.

- The price of a bond with a shorter maturity is less sensitive to interest rate movements than a bond with longer maturity (supposing both bonds are issued by the same company and have the same coupon rate.

- A bond with longer maturity has a higher annual coupon rate.