1. Company ABC has just distributed $4 Million to the common share holders today, and the number of common shares outstanding is 2 Million. The dividend amount is expected to grow at 10% per year over the next 3 years. And then, it is expected to grow at 4% per year thereafter. If the required rate of return on this stock is 5% per year, what should be the stock price?

(A) 188.13

(B) 212.35

(C) 245.74

(D) 464.25

Dividend per share today = $4M/2M = $2/share

CF diagram

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | … |
|  | 2\*(1.1)^1 | 2\*(1.1)^2 | 2\*(1.1)^3 | 2\*(1.1)^3\*(1.04)^1 | 2\*(1.1)^3\*(1.04)^2 | … |
|  | 2.2 | 2.42 | 2.662 | 2.76848 | 2.879219 |  |

Let’s compute the present value at Year 3 of the constantly growing dividends (Growth Phase 2).

PV(CF in Year 4 and onward) = 2\*(1.1)^3\*(1.04)^1 / (0.05- 0.04) = 276.848

Now, the price of the stock is the sum of discounted cashflows in Year 1, Year 2, and Year 3.

P = 2.2/1.05^1 + 2.42/1.05^2 + (2.662+276.848)/1.05^3 = $245.74

2. You purchased an Apple stock at $90 two years ago. You received a dividend of $1 today and the price of the stock today is $120.

(a) Compute the holding period return over this two-year horizon. (Express the answer up to 4 decimal places. For instance, if the answer is 12.34%, then you must report 0.1234)

(1+120-90)/90 = 0.3444

(b) What is the annualized holding period return? (Express the answer up to 4 decimal places. For instance, if the answer is 12.34%, then you must report 0.1234)

The question is asking how much return you made per year.

(1+ Annualized HPR)2 = 1+ 0.3444

Annualized HPR = 0.1595

3. Both Nike and Adidas operate in the business of producing and selling sports goods, and they are considered to be rivals in this industry. Below is information about both firms

<Adidas>   
- Current stock price: $100 per share  
- Number of shares outstanding: 30 million   
- Current level earnings: $60 million

<Nike>   
- Number of shares outstanding: 20 million   
- Current level of earnings: $10 million

You are interested in purchasing a stock of Nike. If you use a multiple valuation approach, what should be the appropriate stock price of Nike? Express the answer as a whole number.

Adidas’ EPS =$60 Million / #30 million shares = $2 per share

Adidas’ P/E ratio = 100/2 = 50

Nike’s EPS =$10 Million / #20 million shares = $0.5 per share

P/E ratio = 50 = Price / 0.5

Price = $25 per share

4. Find the yield-to-maturity of a coupon-paying bond that has a maturity of 5 years, pays coupons annually at the coupon rate of 2%, a face value of $1,000, and the price of $900. Express the answer up to 4 decimal places.

You can use Excel Solver to compute this.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |
| Year | 1 | 2 | 3 | 4 | 5 |
| CF | 20 | 20 | 20 | 20 | 1020 |
| PV | 19.18228 | 18.39799 | 17.64577 | 16.92431 | 827.8492 |
| Sum of PV | 899.9996 |  |  |  |  |
| Price | 900 |  |  |  |  |

YTM =0.0426

5. Which of the following statements is FALSE?

(A) Holding everything else equal, a zero coupon bond has a higher price sensitivity to a change in interest rate is higher than a bond that pays coupons

(B) Holding everything else equal, a bond with a shorter maturity has a higher price sensitivity to a change in interest rate than a bond with a longer maturity

(C) An increase in the market interest rate will decrease the price of a bond that is already issued