1.) a.) \$238.20 . This is \$200*(1.05)*(1.06)*(1.07) or \$200*(1.06)^3

b) \$210. This is $\frac{\$238.20}{1.07*1.06}$.

This is also \$200*1.05.

c.) You expect to get a higher return on the friend's bond because of the risk involved in owning the bond. Since the company is a startup, it is risky in terms of possibility of payback. To compensate the bond owner for taking this risk, the return must be higher than that of the T-bill.

2a.) Take the dividends and compute their net present value. $\frac{108}{1.08}$+$\frac{216}{(1.08)^2}$+ $\frac{216}{(1.08)^3}$ = \$456.65. Then, since this is value of the total dividend stream of all shares, you must divide by 50 to get the per share price of \$9.13.

b.) One should think of this question in terms of arbitrage. I must be indifferent between holding my stock for 1 year and holding a bond (specifically, a T-bill) for the same amount of time. This is because my return on the stock is certain. There is no risk that I will not get my price and dividend at t+1. Thus, my return for owning the stock for 1 year must be 8% , or the return on a T-bill. If I pay \$9.13 for the stock and get \$2.16 in dividends, what can I sell the stock for?

$\frac{Q_{t+1}+2.16-9.13}{9.13}$ = .08.

Q_{t+1} is therefore between \$7.64 and \$7.70 depending on whether you rounded the stock price intially.

c.) The stock price will go down because profits (or dividends) will decline.

3.)a.) \$500,000 $(1+\frac{1}{1.05} + \frac{1}{(1.05)^2} + ... + \frac{1}{(1.05)^{19}})$ = \$6,542,660

b.) \$10,000,000 = X $(\frac{1}{1-\frac{1}{1.05}})$.

Solve for X. X = \$476,190.50. Note that if you assumed that the perpe-

tuity starts next year, then the calculation would be

\$10,000,000= X $(\frac{1}{1-\frac{1}{1.05}})(\frac{1}{1.05})$. Solve for X. X=\$500,000.

4.) b. See the formula for PDV.

5.) d. See the formula for PDV. Each annual value is now divided by $(1+0)^2$

6.) d.

7.) e. If $\frac{currentdiv}{stockprice}$ is low, then you would expect future dividends to rise and interest rates to fall so that the stock price is equal to the PDV of the dividend stream. If dividends are currently low, dividends need to be higher in the future to compensate for the low value.

8.) There is a growing fear among market watchers that the Fed will increase interest rates in order to keep inflation in check. Any sign that the economy is picking up steam further heightens this fear. If the Fed were to increase interest rates in response to inflationary pressures, stock prices would potentially decline for 2 reasons. First, an increase in i decreases the PDV of dividend streams, thereby also reducing stock prices. Additionally, higher interest rates mean less investment and therefore less profits. Stock prices will thus decline.

9.) a.) The price index rises by 13 cents or 2%. If the nominal interest rate is 5%, then the real interest rate is 5-2 or 3%.

b.) If I am able to buy 6 pound today, I have $39. I put this in a T-bill @ 5% and have $40.95 next year. If the price expectation comes true, I will buy roughly 6.18 pounds of coffee next year. (40.95/6.63 or 6*1.03)

10a.) $105

b.) In terms of what we are examining here, it only matters that you use real interest rates if you are interested in the return in terms of goods. However, this is not explicit in the question, so it should not matter.

c.) You would rather have a share in Microsoft since its value is greater.