Problem 1
Return on capital on existing assets = 10%
Reinvestment rate = 0.7
a. Expected growth over next 5 years = ROC on new investments * Reinvestment rate + Growth from improved efficiency
   = (15%)(.70) + (1+ (.15-.10)/.10)^(.15)/5-1
   = 18.95%
b. Portion due to improved efficiency
   New Investment growth = 15% * .7 = 10.50%
   Growth due to improved efficiency = .1895-.105 = 8.45%

Problem 2
a. Reinvestment rate in perpetuity = g/ ROC = 4/12 = 33.33%
   Terminal value = 250 (1-.333)/(.09 -.04) = $3,333.33
   ! Don't forget this
b. If no excess returns, return on capital = 9%
   Reinvestment rate in stable growth = 4/9 = 44.44%
   ! There are other ways you could solve this problem
   Terminal value = 250 (1-.4444)/(.09-.04) = $2,777.78
   Value due to excess returns = $555.56
   ! 3333-2778
   a. You could make the cost of capital 12%
   b. You could estimate the present value of the excess returns.

Problem 3
Current PE ratio = 8
Payout ratio = 60%
PE = Payout ratio/(Cost of equity - g)
8 = .60/(Cost of equity - g)
   ! You don't need a (1+g) since you have expected income next year
Cost of equity - g = 7.50%
If the riskfree rate rises by 1% and expected growth is unchanged, r - g = 8.5%
PE = .60/(.085) = 7.06
I gave you full credit if you kept the (1+g) in the numerator and worked your way to a solution (the answer is about 7.1...