Key to Quiz A: 4/4/12

Quiz: Assume a firm's stock price currently equals $27 and that its stock price will either rise by $5 or fall by $3 one year from today. Assume also that the risk free rate of return is 3% and that you are evaluating a call with a strike price of $25.

a. What are the potential payoffs on the long call?
b. What portfolio of stocks and risk-free bonds will duplicate the payoffs on the call?
c. What payoff would each part of the portfolio generate if the stock price rises by $5 next year?
d. What payoff would each part of the portfolio generate if the stock price falls by $3 next year?
e. What is the value of the long call today?

$S_u = 27 + 5 = 32$; $S_d = 27 – 3 = 24$

a. $C_u = 7$, $C_d = 0$

b. $\Delta = \frac{7-0}{32-24} = 0.875$; $B = \frac{0-0.875(24)}{1.03} = -20.3883$ => buy 0.875 shares and short-sell $20.3883 of risk-free bonds.

c. Stock = .875(32) = 28; Bond = -20.3883*1.03 = -21

d. Stock = .875(24) = 21; Bond = -21

e. C = .875(27) – 20.3883 = 3.2367