Key to Quiz A: 3/28/12

Quiz: Assume that Barnes & Noble's stock price is $14.25 and that you can buy or sell a call on Barnes & Noble for $1.50 and can buy or sell a put on Barnes & Noble for $3.00. The strike price on both options is $15 and both expire four months from today. You can buy a Treasury bond that matures for $15 four months from today for $14.96.

   a. Given this information, what set of transactions today will generate an arbitrage profit? What is your profit today from these transactions?
   b. Show that the payoffs of the transactions you set up in part "a" sum to zero if Barnes & Noble's stock price has fallen to $10 when the options expire four months from today.
   c. Show that the payoffs of the transactions you set up in part "a" sum to zero if Barnes & Noble's stock price has risen to $20 when the options expire four months from today.

a. $S + P = PV(K) + C \Rightarrow 14.25 + 3 = 14.96 + 1.5 \Rightarrow 17.25 \neq 16.46$

   $\Rightarrow$ short stock, sell put, buy bond, and buy call

   $\Rightarrow$ profit $= CF_0 = 14.25 + 3 - 14.96 - 1.5 = 0.79$

b. $S = 10$: $CF_t = -10 - 5 + 15 + 0 = 0$

c. $S = 20$: $CF_t = -20 - 0 + 15 + 5 = 0$