Recount Inc. has a current price of \$60 per share. For each of the next two years, Recount's stock price will either rise \$12 per share or fall \$8 per share. Thus, Recount's stock price will equal either \$72 or \$52 per share one year from today, and Recount's stock price will equal either \$84 or \$64 or \$44 per share two years from today. Assume that the risk-free interest rate equals 6% and that replicating portfolios for a particular call on Recount would need to consist of the following:

Today:  $\Delta = +0.8743$ , B = -35.9644

One year from today:

If Recount's stock price climbs to \$72:  $\Delta = +1.0$ , B = -47.1698 If Recount's stock price falls to \$52:  $\Delta = +0.7$ , B = -29.0566

- a. What transactions would be required today and one year from today to build the replicating portfolios?
- b. Assume Recount's stock price climbs to \$72 next year. Calculate the possible payoffs two years from today on the portfolio you built one year from today ( $\Delta = +1.0$ , B = -47.1698)?
- c. Assume Recount's stock price falls to \$52 next year. Calculate the possible payoffs two years from today on the portfolio you build one year from today ( $\Delta = +0.7$ , B = -29.0566)?

a. Today >> (Buy 0.8743 shares) + (short 35, 9644 of bonds) If S= 72 > Buy 0.1257 shares = 1-8743 \$\ightarrow > \short \frac{\psi}{9.0475} \text{ of bonds} In one year 1) It do nothing . B = -38.1223 = -35.9644(1.06) => change = -47.1698 - (-38.1223) = -9.0475 2) \$ value of shares = .1257 x72 = 9.0504 => short \*9.0504 of bonds to fund. If 5\$5 Z => sell 0.1743 shares = 0.7 - 0.8743 => Buy \$9.0657 a Bonds + return to lender

1) It do nothing, B = -38.1223

=> change = -29.0566 - (-38.1223) z) \$ value of shares soid = .1743 x52 = 9.0636 >> buy \$9.0636 of bonds ul funds b. If 5=84, pag off = 1(84)-47.1698(106)=340 It 5=104, pagot= 1(64)-47.1698(1.06)=14 (6 C. It 5=64, pag of = .7(64) - 29.0566(1.06) = 146 If 5=44, payoff= 7144)-29.0566(1.06)=00