Quiz A for 2:30 Class: 10/31/12

Assume a stock worth $100 will rise by 20% or fall by 10% by one year from today. Assume also that the
risk-free interest rate is 2%.

a. What is the value of a put with a $110 strike price?
b. What investments would be required to create a portfolio that duplicates the payoff on the put?
c. What would be the payoff on each part of the portfolio (in part b) if the stock rises 20%?
d. What would be the payoff on each part of the portfolio (in part b) if the stock falls 10%?

Wall Street Journal Questions are on the back of this page.

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S_0 = 100(1.2) = 120, \quad S_d = 100(0.9) = 90
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\[
P = 0, \quad P_d = 20
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\delta = \frac{0 - 20}{120 - 90} = \frac{-20}{30} = -\frac{2}{3}
\]

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\]

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P = 100 \left(-\frac{2}{3}\right) + 78.4314 = 11.7647
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b. (Short sell \(\frac{2}{3}\) of share) + (invest \(\frac{1}{3}\) in risk-free bonds) = \(78.4314\) in risk-free bonds

c. Stock = -80 = \(-\frac{2}{3}\) of share

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\text{Bonds} = 180 = 78.4314 \times 1.02
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d. Stock = -60 = \(-\frac{2}{3}\) of share

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\text{Bonds} = 180 = 78.4314 \times 1.02
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