Financial Mathematics

Pricing/hedging in many subperiods

Part 2

0060-1. Let X represent the price, three months from now, of some financial asset.

Assume that the expected annual return is 2%.

That is, assume that, if you invest \$1 in the asset today, then its expected value, one year from today, is \$1.02.

That is, assume that 1.02 is the exponential NOT of the drift, but rather of the "augmented" drift.

Assume that the annualized volatility is 0.35.

(In the following problems, use three-month = 0.25 yrs.)

a. Find the annual drift.

b. Find three-month volatility.

c. Find three-month drift.

0060-2. We analyze a particular stock
over a time interval that starts today,
and extends 100 days into the future.

Assume that the current price is \$5 per share.

Assume that the annualized drift is 2.5%,
that the annualized volatility is 40%

Use the 70-30 400-subperiod CRR model.

a. Find the 6 hour uptick and downtick
factors that calibrate to the above data.

b. Write a summation expression
with binomial coefficients
for the expected price of the stock
at the end of the 100 days.