m3f22cw(1718)

F22 ASSESSED COURSEWORK. 17.11.2017

Deadline 1.12.2017, 4pm.

In a three-period binomial model, the stock price goes up by a factor of $u = 6/5$ with probability $p \in (0, 1)$, or down by a factor of $d = 5/6$ with probability $1 - p$. The initial stock price is 60. Neglect interest.

(i) Find the martingale probability p^*.

(ii) Price a European call option with expiry time $T = 3$ with strike $K = 50$.

(iii) Price the corresponding American option, and find the early-exercise and continuation regions.

(iv) Repeat (ii) and (iii) with $K = 70$.

(v) Comment on the difference between the $K = 50$ and 70 results.

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