University of Texas at Austin

Quiz #5

Log-normal stock prices: Conditional expectation.

Problem 5.1. (5 pts)

A non-dividend-paying stock is currently valued at \$100 per share. Its annual mean rate of return is given to be 12% while its volatility is given to be 30%.

Assuming the lognormal stock-price model, find

$$\mathbb{E}[S(2) \,|\, S(2) > 95].$$

(a) \$86.55
(b) \$101.60
(c) \$152.35
(d) \$159.07
(e) None of the above.

Problem 5.2. (5 pts) A non-dividend-paying stock is currently valued at \$100 per share. Its annual mean rate of return is given to be 8% while its volatility is given to be 20%.

Assuming the lognormal stock-price model, find

$$\mathbb{E}[S(4) \,|\, S(4) > 90].$$

(a) \$96.55
(b) \$101.60
(c) \$153.30
(d) \$159.07
(e) None of the above.

Problem 5.3. (5 points) Let $S(T)$ stand for the lognormally distributed time$-T$ stock price. Then, for every $K > 0$, we have that

$$\mathbb{E}[S(T) \,|\, S(T) > K] + \mathbb{E}[S(T) \,|\, S(T) < K]$$

equals ...

(a) $\mathbb{E}[S(T)]$
(b) K
(c) $\mathbb{E}[S(T)] - K$
(d) $\mathbb{E}[S(T)] + K$
(e) None of the above.