

UNIVERSITY OF TEXAS AT AUSTIN

Quiz #11

Log-normal stock prices: Conditional expectation.

Provide your **complete solution** to the following problems. Final answers only, without appropriate justification, will receive zero points even if correct.

Problem 11.1. (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

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

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

Problem 11.2. (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

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

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

Problem 11.3. (5 points) Let $S(T)$ stand for the lognormally distributed time- T stock price. Then, for every $K > 0$, we have that

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

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.