

UNIVERSITY OF TEXAS AT AUSTIN

Quiz # 2

Prerequisite material.

Provide your **complete solution** for the following problems.

Problem 2.1. (5 pts) Consider a continuous-dividend-paying stock currently priced at \$100 per share whose dividend yield is projected to equal 0.02. The price of this stock in one year is modeled using a one-period binomial tree. The down factor d is given to be 0.83, while the up factor u is unknown. (If you want to you can construct a cutesy narrative about coffee being spilled on the model write-up or some such.)

The continuously compounded, risk-free interest rate is given to equal 0.04.

You observe that the price of a one-year, \$110-strike European call option on this stock consistent with the above model equals \$5.15. Find the price of the otherwise identical put option.

Provide your **final answer only** for the following problems:

Problem 2.2. (5 pts) Let X be a normally distributed random variable with mean $\mu = 2$ and standard deviation equal to $\sigma = 1$. Find $\mathbb{E}[X^2]$.

- (a) 2
- (b) 3
- (c) 4
- (d) 5
- (e) None of the above

Problem 2.3. (5 points) Let X and Y be independent and normally distributed. Assume that X is normal with mean 0 and standard deviation 3 and that Y has mean 1 and standard deviation 5. Find $\mathbb{P}[X - Y > 0]$.

- (a) 0.5793
- (b) 0.5160
- (c) 0.5080
- (d) 0.5
- (e) None of the above