

BAYLOR UNIVERSITY  
HANKAMER SCHOOL OF BUSINESS  
DEPARTMENT OF FINANCE, INSURANCE & REAL ESTATE

Risk Management  
Dr. Garven  
Problem Set #8

Name: \_\_\_\_\_

Show your work and write as legibly as possible. Good luck!

**Problem 1** (50 points)

Suppose the current value of a (non-dividend-paying) stock is \$10,000, and the annual continuously compounded riskless rate of interest is 4%. Based on the example provided on pp. 9-14 from the “[Derivatives Theory, Part 1](#)” lecture note, solve parts A and B below.

- A. (25 points) What is the “arbitrage-free” price for a forward contract on this stock which matures 1 year from today?
- B. (25 points) Suppose the forward price is \$10,400. Describe a profitable zero risk, zero net investment trading strategy involving the forward contract and its replicating portfolio. If you implement such a strategy, how much profit will you earn?

**Problem 2** (50 points)

The price of a share of Zoom stock is currently \$250. It is known that at the end of 1 year, the Zoom share price will be either \$312.50 or \$200. The riskless interest rate is 2% per year.

- A. (10 points) Calculate the price of a 1-year European call option on Zoom stock with an exercise price of \$250 by applying the replicating portfolio approach.
- B. (10 points) Calculate the price of a 1-year European call option on Zoom stock with an exercise price of \$250 by applying the risk neutral valuation approach.
- C. (10 points) Calculate the price of a 1-year European put option on Zoom stock with an exercise price of \$250.
- D. (20 points) Next, add another 1-year timestep; i.e., it is known that at the end of 2 years, the Zoom share price will be \$390.63, \$250, or \$160. Calculate the price of a 2-year European call option on Zoom stock with an exercise price of \$250. Also calculate the price of a 2-year European put option on Zoom stock with an exercise price of \$250.