UNIVERSITY OF TEXAS AT AUSTIN

Quiz # 9

Black-Scholes Delta.

Please, provide your **complete solution** to the following problems. Final answers without shown reasoning will get zero points.

Problem 9.1. (5 points) Assume the Black-Scholes framework. For an at-the-money, $T-$year European call option on a non-dividend-paying stock you are given that its delta equals 0.5832. What is the delta of an otherwise identical option with exercise date at time $2T$?

Problem 9.2. (5 points) Assume the Black-Scholes framework as model for the price of a non-dividend-paying stock. What is the difference between the delta of a European call option and the delta of the otherwise identical put option?

Problem 9.3. (5 points) Assume the Black-Scholes model. Let the current stock price of a continuous-dividend-paying stock be equal to \$80. The stock's dividend yield is 0.01 and its volatility is 0.30.

The continuously compounded risk-free interest rate is 0.04.

Consider a \$82-strike, six-month European put option on the above stock. What is the put option's delta?