

University of California, Los Angeles
Department of Statistics

Statistics C183/C283

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Lab

Problem 1

Using the lognormal property of stock prices estimate the **annual volatility** of a stock of your choice. Use the adjusted daily close prices for the period 01-March-2018 to 04-June-2018.

Problem 2

You want to find the price of a European call option that will expire on Friday, 21 September written on the stock of exercise 1 using simulations. Use the annual volatility you calculated in problem 1 to simulate 10000 paths of the stock. **Assume daily intervals** and that the continuously compounded riskless rate of interest is $r = 5\%$. Note: The time of the contract is 05 June.

Problem 3

Use the **binomial** option pricing model to find the price of a European call written on the stock of exercise 1. Use the annual volatility you calculated in problem 1 and divide the time to expiration into 30 intervals.

Problem 4

Repeat problem 3 using the **Black-Scholes-Merton** option pricing model.

Note:

For the pricing of the European call option choose an appropriate value of the exercise price E .