

22M:096:001
Finance Module–Homework 1

The goal of this assignment is to use finite difference methods to solve the Black-Scholes equation for some basic option types.

1. Write a MATLAB program that solves the Black-Scholes equation for the European Put with the following conditions:
 - Exercise price, $E = \$10$
 - annual interest rate, $r = 10\%$
 - volatility, $\sigma = 0.4$

Calculate option prices for 3 month ($T = .25$) and six month options.

2. Write a MATLAB program that solves the Black-Scholes equation for the American Put with the same conditions and same durations as above.
3. Write a MATLAB program that solves the Black-Scholes equation for the European Call with the same conditions and same durations as above.
4. Write a MATLAB program that solves the Black-Scholes equation for the American Call with the same conditions and same durations as above.

Note: Once you have finished exercise #1 you will only need to make slight modifications to your code to complete exercises 2, 3 and 4.