Homework #1 Into to Auto Trading Systems

Conditional Expectation/Brownian Motion

Due date: Feb 4, 2019 (in class)

Important Note: All home works should be handed in hard copies. No late homework will be accepted. *Answers should contain both the Matlab program, PLUS screen snap shorts to demonstrate correct running of the program.*

Problem 1. Write Matlab program to compute

$$\sin(1 + x^{3/4} + \log(x))$$

for $x = 100$.

Problem 2. Write a Matlab that can compute

$$f(x) = \begin{cases} (1+x)^4 & \text{if } x \geq 0 \\ \exp(\sin(x)) & \text{if } x < 0 \end{cases}$$

Problem 3. Write a Matlab that can compute

$$f(x) = \begin{cases} (1+x)^4 & \text{if } x \geq 0 \\ \exp(\sin(x)) & \text{if } -10 < x < 0 \\ \sqrt{x^2+1} & \text{if } x \leq -10 \end{cases}$$

for an x you input from keyboard.

Problem 4. Write *for loop* program that can compute the average of the series $1, 2, 3, ...500$.

Problem 5. Use *while loop* Write a program that can compute

$$f(n) = \sum_{k=1}^{n} [\sin(k) + k] \cdot \frac{1}{k^2}$$

Note: Note you can stop adding whenever when you first encounter k such that

$$[\sin(k) + k] \cdot \frac{1}{k^2} < 10^{-5}.$$

Problem 6. Go through the relevant Sections in Tutorial and Primer thoroughly!

Additional Things to try if you are experienced programer.

- Read the Tutorial and Primer about how to write function. Turn the above program into function form
- Read about How Matlab Pass arguments to Functions
- Read about Global Variables