Department of Systems Engineering & Operation Research
George Mason University

OR 645 Stochastic Processes

Prof. Chun-Hung Chen Fall 2009

Homework Assignment #4

due 7:20 pm, Tuesday, December 1

****** Due time will be strictly enforced. Late HW penalty is increased to at least 50% for this one ******

10 points for each problem.

(1) Suppose you have a stock whose value follows Brownian motion with $X(t) \sim N(0, s^2 t)$ and $s = 5$. If the stock is up \$10 after 2 hours, what is the probability the stock is above its starting value at the 6-hour mark?

(2) Continue Problem (1). If the stock is up \$10 after 6 hours, what is the probability the stock was above its starting value after 2 hours?

(3) Let $X(t)$ be Brownian motion with $\sigma = 2$ and drift $\mu = 0.1$. What is $P[X(30) > 0 \mid X(10) = -3]$?

(4) Do problem 4.61 (a) and (b) in the text.