

Weekly Homework 6

Math 485

October 31, 2013

1 Textbook:

Section 5.4 (page 92) Problem 1 a - d

Section 5.6 (page 97) 1,2,3.

Section 5.7 (page 103) 1,2.

Section 6.1 (page 113) 1,2,3.

2 Additional problem

1. Verify the following given processes solve the corresponding stochastic differential equations:

a. $X_t = e^{B_t}$ solves

$$dX_t = \frac{1}{2}X_t dt + X_t dB_t.$$

b. $X_t = \frac{B_t}{1+t}$ solves

$$dX_t = -\frac{1}{1+t}X_t dt + \frac{1}{1+t}dB_t.$$

c. $X_t = \sin(B_t)$ solves

$$dX_t = -\frac{1}{2}X_t dt + \sqrt{1 - X_t^2}dB_t.$$