EE 381 Homework 3 Part 2

Name, I.D. #, and Date: _____

Instructions: Instructions: Attempt each exercise and show your work. You can attach pages to your submission. Submit this part of homework 3 with the additional parts of homework 3 on Monday March 2. You may want to make copies of your work.

Each day the price of a new stock moves up one point or down one point with probabilities $\frac{3}{4}$ and $\frac{1}{4}$, respectively. What is the probability that after six days the stock will have returned to its original quotation? Assume that the daily price fluctuations are independent events.

If a family has four children, is it more likely they will have two boys and two girls or three of one sex and one of the other? (Assume that the probability of any child being a boy is $\frac{1}{2}$.)

Experience has shown that only $\frac{1}{3}$ of all patients having a certain disease will recover if given the standard treatment. A new drug is to be tested on a group of 12 volunteers. If the FDA requires that at least seven of the patients recover before it will license the new drug, what is the probability that the treatment will be discredited even if it has potential to increase an individual's recovery rate to $\frac{1}{2}$?