ECE 5283
Kalman Filtering
Homework 1

Fall 2005 Dr. Havlicek

1. You are a contestant on the game show *Let's Make a Deal* starring Monty Hall. You have won the initial round! So now you have a chance to win a **really great prize**. (Please Note: at least for the purposes of this problem, a goat is *not* considered to be a **really great prize**).

   Monty shows you three doors. Behind one of them is a **really great prize**. Behind the other two are goats.

   You pick a door, say door number one. Monty then shows you what is behind one of the other two doors that you did not pick (if you picked door one, then he will show you behind either door two or door three). It is a goat!

   Now, Monty says to you that you can either keep the door that you have (the one you picked initially), or you can switch to the door that he did not show.

   Use probability theory to figure out whether you should switch or not in order to maximize your probability of winning the **really great prize**.

   There are two important things to realize about this problem:

   (a) Monty *knows full well* exactly which door holds the **really great prize**!

   (b) Monty is *never* going to show you anything but a goat. There is only one **really great prize**, but there are two goats. So he can always show you behind a door that holds a goat.

2. Text problem 1.12(c).
3. Text problem 1.19.
4. Text problem 1.21(b).
5. Text problem 1.24(a).
6. Text problem 1.32.
7. Text problem 1.33.

DUE: 9/20/05