

Things to practice: computing the probability distribution of a function of a random variable, c  
computing and interpreting expected values.

1. 3.51, p. 180 (Hint: use symmetry where possible.)
2. 3.53, p. 180
3. 3.56, p. 180
4. 3.57 a, p. 180 (Assume  $X$  is a continuous random variable. Express your answers in terms of the cdf and/or pdf of  $X$ .)
5. 3.65, p. 181
6. 3.75 (a), p. 182
7. 3.79, p. 182
8. A man aiming at a target receives 10 points if his shot is within 1 inch of the target, 5 points if it is between 1 and 3 inches from the target, and 3 points if it is between 3 and 5 inches from the target. Find the expected number of points scored if the distance from shot to the target is uniformly distributed between 0 and 10.

Game Show Problem: Hand in with the NEXT homework set.

On a certain game show, you will win the \$10K Grand Prize if you can guess the door behind which it is located. The situation is the following.

The prize is equally likely to be located each of three doors. You select one of the doors. However, after making your choice, the game show host opens a different door and shows you that the prize is not there. (The host knows the location of the prize and is careful not to open the corresponding door.) The host then gives you the option of choosing the "other" closed door or sticking with your original choice.

Question: Should you stick with your present choice, switch to the other door, or does it make no difference?

Please, justify your answer. Indeed the problem will be graded mainly on your justification, rather than the answer itself. This is because the tough thing is to find an argument that is convincing.

**PUT YOUR SOLUTION TO THIS PROBLEM ON THE LAST PAGE OF YOUR SOLUTIONS, ALL BY ITSELF, SO IT CAN BE GRADED SEPARATELY. BE SURE TO WRITE YOUR NAME ON THE LAST PAGE.**