Oct 17 Homework

1. Schumer problem 9.4. (Hint: answer in back of book is wrong)

2. Rework example 3, but only assuming face values are nonnegative integers, ie, they can be 0. Find two additional solutions, different from Figure 9.3. (cf. problem 9.6)

3. Team A has a probability of r of beating B in any given game. What is the probability team A will win a best of three series with B? (cf. problem 9.3). If $\frac{1}{2} < r < 1$, show the probability that A wins the series is greater than r.

4. A regular N sided die is rolled (ie, sides are numbered 1 through N) and a regular N+2 sided die is rolled. What is the probability that the N+2 sided die shows a larger number? (Hint: forget Schumer's proof for example 4, a more direct proof is recommended now.)

5. Follow the analysis of example 3 to design two (different) 4-sided dice (tetrahedra) with positive integer values on each face, such that their sum has the same probability distribution as a pair of "normal" 4-sided dice (ie, with numbers 1-2-3-4 on their faces).

6. Schumer gives one possible solution to problem 9.10 in the back of the book. Call his three dice (in order): paper, scissors and rock. What is the probability that scissors cuts paper? rock crushes scissors? paper covers rock? (For you non-sports fans, "cuts", "crushes" and "covers" are just synonyms for "beats"!)