

Homework 7

Exercises to Turn In. Due Date: Friday, March 11. Have a great Spring Break!

1. Ross 4.4
2. Ross 4.12. Make an educated guess and show that your guess is correct.
3. Ross 4.33. Part a is true by Markov chain theory in all but one extreme case which the problem overlooks. Elaborate.
4. Ross 4.34. For part c: Find the probability one goes extinct and use that to calculate the probability a Poisson distributed number go extinct. The algebra works out as claimed.
5. From Rick Bradley's problem sets as a modification of a problem in Bhattacharya and Waymire's Stochastic Processes with Applications text: Suppose males pass down their surname through their male offspring's families. Suppose each male has exactly 2 children with boys and girls being equally likely. Find the probability that a surname eventually stops existing. Calculate this probability when each male has exactly 3 children. The study of British surnames is one of the reasons branching process theory was developed.