Analysis of Algorithms - Homework II

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1 Instructions

1. The homework is due on October 25, in class.
2. Attempt as many problems as you can. You will be given partial credit.

2 Problems

1. Pilot Jim is faced with the task of blowing up a bridge. In each sortie, he carries exactly 5 bombs; each bomb will hit the bridge independently with probability 0.5. The bridge will be blown up, if even one bomb hits it. What is the probability that the bridge is is blown up in one sortie? (3 points)
2. What is the expected number of sorties that Jim should carry out to ensure that the bridge is destroyed? (2 points)
3. WVU has 11 games in its football season. The season is deemed winning, if it wins at least 6 games. Let us say that WVU wins each game independently, with probability 0.7. What is the probability that WVU wins the season within 10 games? (3 points)
4. What is the expected number of games that WVU has to play to ensure a winning season? (2 points)