Mathematics 469 - Spring, 2006 - Homework 8

Due March 27.

1. Suppose in a collection of 1,200 policyholders, the probability that each policyholder has a claim in a given week is 1/500 (independent of other policyholders). Find approximately the probability that in a given week at most 2 policyholders file a claim.

2. Suppose that $X_1$ and $X_2$ are independent random variables where $X_1$ is normal with mean 0 and standard deviation 2.4 and $X_2$ is normal with mean 0 and standard deviation 3.2. Let $\overline{X} = (X_1 + X_2)/2$. Find $P(|\overline{X}| \leq 1.52)$.

3. A team is playing a series where the team is trying to win 3 games before losing 3 games. The team wins each game with probability 0.55 independent of earlier games. Find the probability that the team wins 3 games before it loses 3 games.