

Statistics for the Life Sciences

Math 20340 Section 01, Fall 2009

Homework 4 Solutions

- **5.40:**
 - **a:** .109
 - **b:** .958
 - **c:** .257
 - **d:** .809

- **5.42:** $n = 25, p = .05$ so $\mu = np = 1.25$ for Poisson approximation
 - $p(0) = .2865\dots$ using Poisson; actually .277...
 - $p(1) = .35813\dots$ using Poisson; actually .365...

- **5.43:** Model number of near misses by Poisson with $\mu = 5$
 - **a:** $p(0) = .007$
 - **b:** $p(5) = .171$
 - **c:** $p(\geq 5) = 1 - p(\leq 4) = .56$

- **5.47:**

Probability that count will exceed maximum is probability that Poisson with $\mu = 2$ is six or greater; this is .017; so it is unlikely that count will exceed maximum.

- **5.48:** Model number of occurrences per 100,000 as Poisson with $\mu = 2.5$
 - **a:** $p(\leq 5) = .958$
 - **b:** $p(> 5) = 1 - p(\leq 5) = .042$
 - **c:** At most 5 (95.8%)