

# Homework 15

Math 262

Write your solutions to the following problems and turn them in to the homework mailbox (RMS level 3, near the fireplace) by 4:00pm on **Wednesday, May 9**.

## Book Problems

- Section 4.4 #76, 77, 79 (pages 286–289)
- Section 4.5 #85, 86, 91, 95, 99 (pages 300–302)

## Additional Problems

1. Suppose that  $X$  is the random variable denoting the number of bacteria per cubic centimeter in water samples and that for a given location,  $X$  has a Poisson distribution with mean  $\lambda$ . But  $\lambda$  varies from location to location and has a gamma distribution with parameters  $\alpha$  and  $\beta$ . Find expressions for  $E(X)$  and  $V(X)$  in terms of  $\alpha$  and  $\beta$ .
2. Explain in your own words the difference between the Central Limit Theorem and the Law of Large Numbers.