

STAT 575
Homework 5 Problems
due Wednesday March 3

3 Problems. Show all work.

NOTE on the due date of HW5 (W March 3) there will be a short answer/multiple choice question given during the in-class zoom that you will answer on Blackboard as part of this HW. It will be worth 10 points (out of the 100 possible for this HW).

The numbers refers to *Cunningham et.al*, if not specified otherwise. Some problems may have additional parts.

1. Exponential Distribution Problem: You are given that Jane has a constant force of mortality $\mu_x = 0.01$ for all $x > 0$.

(a) Find Jane's survival distribution $S_X(x)$.

(b) Let Jane's future lifetime be denoted as T_x . Find the expected future lifetime which is denoted as $\overset{\circ}{e}_x$.

(c) Calculate the probability that Jane's future lifetime will exceed her **expected** future lifetime.

2. p. 118, 4-31

3. p. 118, 4-34 (Hint: We are looking for the value of y such that $\frac{l_y}{l_{50}} = 0.5$)