

Homework 8

Do the problems on **Webwork** and upload the following problems to Gradescope before 8 am on Mar. 20th.

Homework should be written neatly and clearly explained. Include your name and id number in the top right corner of your homework.

Problem 1. Let X be a random variable, uniformly distributed on the interval $[0, 2]$. Let Y be an exponential random variable with mean 2.

- (a) For $0 < s < t < 2$, what is the $\mathbb{P}(X > t | X > s)$?
- (b) For $0 < s < t$, what is the $\mathbb{P}(Y > t | Y > s)$?

Problem 2. Let X be a random variable with pdf

$$f_X = \frac{3}{2}e^{-3|x|} \text{ for all } x.$$

- (a) Verify that f_X is a pdf.
- (b) Compute the moment generating function (MGF) of X .