Homework 13

Do the problems on **Webwork** and upload the following problems to Gradescope before 8 am on May 1st. When you upload your assignment, mark the page on which your solution to each problem starts, or upload each problem individually.

Homework should be written neatly and clearly explained. If it requires more than one sheet, the sheets must be stapled. Include your name and id number in the top right corner of your homework.

Problem 1. The amount of time it takes for a bus to arrive is an exponential random variable with parameter 1. Once the bus arrives the amount of time to load the bus is a random variable uniformly distributed on the interval $[0, 2]$. These two random variables are independent. Compute the pdf of the time for the bus to arrive plus the time to load.

Problem 2. Let X be a continuous uniform random variable on the interval $[0, 3]$ and $Y = X - X^2$.

   NOTE: I just realized, I meant to consider the function $Y = 2X - X^2$, instead of $Y = X - X^2$. It's essentially the same problem, but works out slightly nicer. You can do either one.

(a) Compute the pdf of Y.

(b) Check that your answer is a pdf.