Homework 3

1) Generate 1000 X from GAM(3,2) distribution (This is an abbreviation for gamma distribution with alpha = 3 and beta = 2. See page 624 in Casella and Berger as well as rgamma, pgamma, dgamma, and qgamma function in R). Compare empirical density and cdf with true density and cdf. Generate Y=UNIF(0,1) using probability integral transformation and verify that empirical cdf is similar to true cdf. Next, generate 1000 U from UNIF(0,1) and then generate V~GAM(3,2) using the inverse cdf of a gamma distribution. Compare empirical density and cdf with true density and cdf. Please turn in plots of your simulations as well as printout of your code.

2) Let X be a non-negative continuous random variable with CDF F(x) and E(X)< infinite. Show that E(X)=integral from 0 to infinity (1-F(x))dx.

Casella and Berger Book: 2.1, 2.2, 2.3, 2.4, 2.6 (don't need to show pdf integrates to 1), 2.8 (don't need to show it's a cdf),2.15, 2.20, 2.24, 2.33