1. Suppose X ~ U[-2, 2]. For what a,b is a+bX~U[0,1]?
2. A city bus is supposed to arrive at a fixed stop at 12:00 noon, but its arrival time is uniformly distributed between 11:57 AM and 12:04 PM. If it has not yet arrived at 12:01 PM, what is the probability that it will arrive by 12:02 PM?
3. The concentration of acetic acid in table vinegar has a Beta distribution with mean 0.083 and standard deviation .077. in what percentage of bottles of vinegar does the acetic acid concentration exceed 20%?
4. Suppose X~Exp(1). What is the density of 2X+1?
5. The number of jokes your professor tells in class per t minutes has a Poisson distribution with mean 0.1t. if the class started at 12:00 noon, what is the probability that the first joke will be told before 12:20 PM?
6. Let X~Exp(λ). Find a formula for P(X>2λ). What is special about the formula?
7. Suppose X has the Gamma density with parameters **λ**=1, **α**=2. Find the expectation of the integer part and the fractional part of X.
8. Suppose X1, X2, …. , Xn are n iid standard exponential variables. Find the mean, median, and variance of the minimum of X1, X2, …. , Xn.
9. Suppose X is uniformly distributed on [0, 2pi]. Find P( -.5 < sin X < .5).