Continuous Probability Distributions : Tutorial Sheet

1. Suppose a variable follows the continuous uniform distribution with a expected value $E(X)$ of 5 and uppper limit b of 8.

$$X \sim U(a, b)$$

   (a) What is the lower limit of the variable: a?

   (b) What is the probability of an outcome less than 4? (i.e. $P(X \leq 4)$

   (c) What is the variance of the variable X?

2. The average lifespan of a laptop is 5 year. You may assume that the lifespan of laptop computers follows an exponential distribution.

   (a) What is the probability that the lifespan of the laptop will be at least 6 years.

   (b) What is the probability that the lifespan of the laptop will not exceed 4 years.

   (c) What is the probability that the lifespan of the laptop will be between 5 years and 6 years.

3. The average lifespan of a PC monitor is 6 years. You may assume that the lifespan of monitors follows an exponential probability distribution.

   (a) What is the probability that the lifespan of the monitor will be at least 5 years?

   (b) What is the probability that the lifespan of the monitor will not exceed 4 years?

   (c) What is the probability of the lifespan being between 5 years and 7 years?

   [For exponential distributions, with mean duration : P(X k) = 1- e(-k/)]