Appendix A (to appear in the midterm exam for summer 2011)

A random variable uniformly distributed (continuous) in $a \le x \le b$ has probability density function,

$$f(x) = \begin{cases} \dfrac{1}{b-a} & a \le x \le b \\ 0 & \text{otherwise.} \end{cases}$$

A random variable binomially distributed for *n* trials with probability *p* of success for each trial has probability mass function,

$$f(k) = \binom{n}{k} p^k (1-p)^{n-k} \quad 0 \le k \le n\,.$$

A random variable Poisson distributed for a rate λ of arrivals has probability mass function,

$$f(k) = \frac{\lambda^k}{k!} e^{-\lambda} \quad k = 0, 1, 2, \ldots$$

A random variable exponentially distributed for rate λ has density function,

$$f(t) = \begin{cases} \lambda e^{-\lambda t} & t > 0 \\ 0 & t \le 0 \end{cases}$$

and distribution function,

$$F(t) = \begin{cases} 1 - e^{-\lambda t} & x > 0 \\ 0 & x \le 0\,. \end{cases}$$