Conditions

What are the exact differences between exponential and negative exponential distribution?

Solution

There are actually no differences between them. It is just different names of one kind of distribution with pdf:

$$f(x;\lambda) = \begin{cases} \lambda e^{-\lambda x}, & x \geq 0, \\ 0, & x < 0. \end{cases}$$

And cdf:

$$F(x;\lambda) = \begin{cases} 1 - e^{-\lambda x}, & x \geq 0, \\ 0, & x < 0. \end{cases}$$

In probability theory and statistics, the exponential distribution (a.k.a. negative exponential distribution) is a family of continuous probability distributions. It describes the time between events in a Poisson process, i.e. a process in which events occur continuously and independently at a constant average rate. It is the continuous analogue of the geometric distribution.