Negative binomial distribution

A Binomial distribution, but the experiment is repeated until a *fixed number of successes* occur. We are looking to land on a success after k'th success after x trials.

Random variable

Random variable X of this distribution is a number of trials to get k successes.

Formula

$$b^{\star}(x;k,p) = \binom{x-1}{k-1} p^k q^{x-k}$$

Mean

Mean for binomial distribution is

$$\mu = np$$

Variance

Variance for binomial distribution is

$$\sigma^2 = npq$$