

## Equations for Chi-Squared Distribution

CHSQMTBF.BAS

TESTTIME.XLSX

$$1 - F(\chi^2) = \sum_{x=0}^N e(-\lambda T) * \frac{(\lambda T)^x}{x!}$$

$$\frac{\chi^2}{2} = \frac{T}{MTBF} = \lambda T$$

*where*

$N$  = no. of failures

$T$  = test time (hours or demands)

MTBF = mean time between failure (hours or demands)

$F(\chi^2)$  = confidence level = 1 - Pr( $\leq N$  failures in test time)

$\lambda$  = failure rate (per hour) = 1 / MTBF

$2(N+1)$  = degrees of freedom