λ follows Poisson distribution, and service time distribution is exponential with λ.

Then we have the following formulas:

$$r = \frac{\rho}{1-\rho}$$

$$w = \frac{\rho^2}{1-\rho}$$

$$T_r = \frac{T_s}{1-\rho}$$

$$T_w = \frac{\rho T_s}{1-\rho}$$

$$\sigma_r = \frac{\sqrt{\rho}}{1-\rho}$$

$$\sigma_{T_r} = \frac{T_s}{1-\rho}$$

$$m_{T_r}(y) = T_r \times \ln\left(\frac{100}{100-y}\right)$$

the value T_r occurs y percent of time.

$$\Pr[R = N] = (1-\rho) \cdot \rho^N$$

the probability that the number of jobs in system (resident) is N.

$$\Pr[R \le N] = \sum_{i=0}^{N} (1-\rho) \cdot \rho^i$$

$$m_{T_w}(y) = \frac{T_w}{\rho} \times \ln\left(\frac{100\rho}{100-y}\right)$$

the value T_w occurs y percent of time.

$m_x(y)$ the y^{th} percentile; that value of y below which x occurs y percent of the time.