Example 5.1

Q W大小关系?

W : mean waiting time in system

$M/M/1$ $\quad W = \frac{L}{\lambda} = \frac{1}{\mu(1-\rho)} = \frac{1}{\mu-\lambda} \quad \rho = \frac{\lambda}{\mu}$

$M/M/m$ $\quad W = \frac{L}{\lambda} = \frac{\rho(m\rho)^m \pi_0}{m!\,\lambda(1-\rho)^2} + \frac{1}{\mu}$

Solution

$W_1$ $\quad \rho = \frac{\lambda/2}{\mu} = \frac{\lambda}{2\mu} \quad W_1 = \frac{1}{\mu(1-\frac{\lambda}{2\mu})} = \frac{1}{\mu - \frac{\lambda}{2}}$ ($\lambda/2$, $\mu/2$)

$W_2$ $\quad \rho = \frac{\lambda}{2\mu} \quad W_2 = \frac{1}{\mu(1-\frac{\lambda}{2\mu})} = \frac{2}{2\mu-\lambda} \quad \frac{1}{2\mu-\lambda} = \frac{2}{2\mu-\lambda}$

$W_3$ $\quad \rho = \frac{\lambda}{2\mu} \quad W_3 = \frac{4\mu}{4\mu^2-\lambda^2}$