we define 8:00 as $t=0$,

$$\lambda(t) = \begin{cases} 100 & 0 \leq t \leq 1/2 \\ 600t - 200 & 1/2 < t \leq 3/4 \\ 400t - 50 & 3/4 < t \leq 1 \\ -500t + 850 & 1 < t \leq 1.5 \end{cases}$$

$$E[N(t)] = \begin{cases} \int_0^t 100dt = \\ 100t & 0 \leq t \leq 1/2 \\ \int_{1/2}^t 600t - 200dt + 50 = \\ 300(t^2 - 1/4) - 200(t - 1/2) + 50 & 1/2 < t \leq 3/4 \\ \int_{3/4}^t 400t - 50dt + 93.75 = \\ 25(8t^2 - 2t - 3) + 93.75 & 3/4 < t \leq 1 \\ \int_1^t -500t + 850dt + 168.75 = \\ -50(5t^2 - 17t + 12) + 168.75 & 1 < t \leq 1.5 \end{cases}$$

$$25(8t^2 - 2t - 3) + 93.75 = 150$$

$$\cancel{t_1 = 1/8(1 - \sqrt{43}) = -0.69}$$

$$t_2 = 1/8(1 + \sqrt{43}) \approx 0.94468$$

$$E[N(t)] = \begin{cases} 100t & 0 \le t \le 1/2 \\ 300(t^2 - 1/4) - 200(t - 1/2) + 50 & 1/2 < t \le 3/4 \\ 25(8t^2 - 2t - 3) + 93.75 & 3/4 < t < 0.94468 \\ 150 & t \ge 0.94468 \end{cases}$$

$$\frac{e^{-\lambda} \lambda^{k}}{k!}$$

$$\frac{e^{-\lambda} \lambda^{1}}{1!} + \dots + \frac{e^{-\lambda} \lambda^{149}}{149!} = 0.8.$$

$$\sum_{0}^{149} p(x=k) = 0.8 \qquad \underline{P(x \le 150)}$$

$$\sum_{k=0}^{149} \frac{e^{-\lambda} \lambda^{k}}{k!} = 1$$

λ ?

1.609438

$K = 1,149$

$$0.2 \quad \sum_{K=1}^{149} \frac{e^{-\lambda} \cdot \lambda^{K}}{K!} - 0.8 = 0$$

$1,6043\ldots$