$$P(AB) = P(A|B)\cdot P(B) = P(B|A)\cdot P(A)$$

Note Title 9/13/2011

$$P(X<1) = 1-e^{-\lambda\cdot 1} = 1-e^{-2.4\times 1} = 0.909$$

r.v. $N(t)$ = # of failures by time t

Q2: $P(N(t)=n) = P(N(1)=5)$

$t \to$ 1 day, $n \to 5$

$$= \frac{e^{-\lambda t}\cdot \lambda^n}{n!}$$

$$= \frac{e^{-2.4}\cdot 2.4^5}{5!} = 0.06$$

Q3 $P(N(5)<10) = P(N(5)=0) + P(N(5)=1) + \cdots P(N(5)=9)$

Q4 $P(N(1)=0)$

Q5 Poisson $\lambda' = \lambda\cdot\frac{1}{9} = \frac{2.4}{9}$

M_X : liability for claims w/o deductible

M_Y : " " " with "

A : claim amount ~ exponential distr. $E[A] = 700$

$M_X = A_1 + A_2 + A_3 + \cdots A_X$ X : # of arrived claim w/o deductible $\rightarrow$ Poisson $\lambda_x = \frac{1}{3} \cdot 100$

$E[M_X] = E[A] \cdot E[X] = \frac{1}{\lambda_x} \cdot E[A]$

$E[M_Y] = \left(E[A] - 250\right) \cdot E[Y] = \frac{1}{\lambda_y} \cdot (E[A] - 250)$ $\lambda_y = \frac{100}{3} \times 2$

$E[M_X] + E[M_Y] = \frac{700 \times 100}{3} + \frac{200}{3} \times 450$

$\hookrightarrow$ liability for a week