

IMM - DTU

02405 Probability
2003-11-13
BFN/bfn

Question a) We determine $P(X < Y)$ using the law of averaged conditional probabilities

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$$P(X < Y)$$

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$$P(X < Y) = P(X < Y|Y = 0)P(Y = 0) + P(X < Y|Y = 1)P(Y = 1) \\ + P(X < Y|Y = 2)P(Y = 2) + P(X < Y|Y = 3)P(Y = 3) + P(X < Y|Y \geq 4)P(Y \geq 4)$$

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leading to

$$P(X < Y) = 1 - e^{-\lambda} \left(1 + \lambda + \frac{\lambda^2}{2} \right)$$

Question b)

Question c)