IMM - DTU

02407 Stochastic Processes
2011-9-27
DAME/dame

Solution for exercise 6.3.1 in Karlin and Pinsky

$$\begin{aligned}
\lim_{h\to 0} P(x(t+h)=1|x(t)=0) &= \lim_{h\to 0} P(N(t+h)-N(t)=1)\cdot 1 \\
&= \lim_{h\to 0} e^{-\lambda h}\cdot\frac{\lambda h}{1} \qquad \Rightarrow \\
\lambda_0 &= \lambda
\end{aligned}$$

$$\begin{aligned}
\lim_{h\to 0} P(x(t+h)=0|x(t)=1) &= \lim_{h\to 0} P(N(t+h)-N(t)=1)\cdot(1-\alpha) \\
&= (1-\alpha)\lim_{h\to 0}\frac{e^{-\lambda h}\lambda h}{1} \qquad \Rightarrow \\
\mu_1 &= (1-\alpha)\lambda
\end{aligned}$$