IMM - DTU

02407 Stochastic Processes
2011-9-22
DAME/dame

Solution for exercise 5.5.6 in Karlin and Pinsky

We can easily get

$$\begin{aligned} F_R(x) &= P(R \leq x) = 1 - P(R > x) \\ &= 1 - P(\textit{no other stars in the sphere volum}\frac{4\pi x^3}{3}) \\ &= 1 - e^{-\lambda\frac{4\pi x^3}{3}} \\ \Rightarrow\ f_R(x) &= \frac{d}{dx}F_R(x) \\ &= 4\lambda\pi x^2 e^{-\frac{4\lambda\pi x^3}{3}} \end{aligned}$$