Solution for exercise 6.1.3 in Karlin and Pinsky

Assume there are i infected individuals. One of these infected individuals infects one randomly chosen person with rate $\alpha h + o(h)$. There are $N - i$ susceptible persons and the infection rate for one person is $(N - i)(\alpha h + o(h)) = (N - i)\alpha h + o(h)$. This rate appear i times implying:

$$\lambda_i = i(N - i)\alpha.$$