

210831

Project 1

$$N'(t) = \lambda N(t) + V$$

$$N(t) = N_0 e^{\lambda t} + \frac{V}{\lambda} (e^{\lambda t} - 1)$$

$$N(1) = 1M e^{\lambda 1} + \frac{4350000}{\lambda} (e^{\lambda 1} - 1) = 1564000$$

$$\begin{aligned} f(\lambda) &= 0 \\ \rightarrow 1M e^{\lambda} + \frac{4350000}{\lambda} (e^{\lambda} - 1) - 1564000 &\Rightarrow 0 \end{aligned}$$

$$f(\lambda) = 1M e^{\lambda} + \frac{4350000}{\lambda} (e^{\lambda} - 1) - 1564000$$

$$f'(\lambda) = \frac{(1M \lambda^2 + 4350000 \lambda - 4350000) e^{\lambda} + 4350000}{\lambda^2}$$

↑ used an online derivative calculator