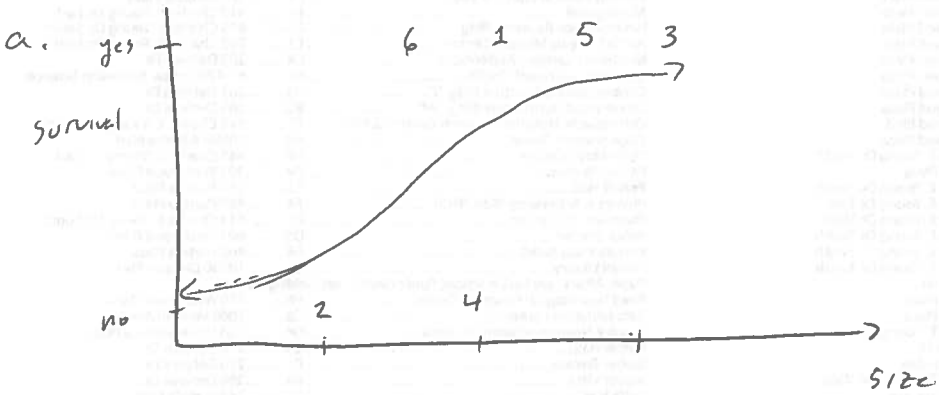
Regression answer

04/28/2017

a.



b. Each individual dies at rate λ, so the pdf for time of death is $\lambda e^{-\lambda t}$

$$\mathcal{L}(\lambda) = (\lambda e^{-\lambda t_1})(\lambda e^{-\lambda t_2}) \cdots (\lambda e^{-\lambda t_6}) = \lambda^6 e^{-\lambda(t_1+t_2+t_3+t_4+t_5+t_6)}$$

$$= \lambda^6 e^{-\lambda(2.5+0.5+1.5+0.25+3.0+2.0)}$$

$$= \lambda^6 e^{-9.75\lambda}$$

If you are curious, this has a maximum at $\lambda = \frac{9.75}{6} = 1.625$

c. Wow. How about we assume the death rate is $\lambda_0 + \lambda_1 s$ where s is size.

$$\mathcal{L}(\lambda_0, \lambda_1) = (\lambda_0 + \lambda_1 s_1) e^{-(\lambda_0+\lambda_1 s_1)t_1} \cdot (\lambda_0 + \lambda_1 s_2) e^{-(\lambda_0+\lambda_1 s_2)t_2} \cdots (\lambda_0 + \lambda_1 s_6) e^{-(\lambda_0+\lambda_1 s_6)t_6}$$