$$f_\eta(t) = \left(\frac{b}{\eta}\right)\left(\frac{t}{\eta}\right)^{b-1} e^{-\left(\frac{t}{\eta}\right)^b}$$

$H_0: \eta = \eta_1$ vs $H_1: \eta = \eta_2$

$$L(t_1, \dots t_n \mid \eta_1) = \prod_{i=1}^{n} f_{\eta_1}(t_i) =$$

$$= \left(\frac{b}{\eta_1}\right)^n \prod_{i=1}^{n} \left(\frac{t_i}{\eta_1}\right)^{b-1} e^{-\left(\frac{t_i}{\eta_1}\right)^b} =$$

$$= \left(\frac{b}{\eta_1^b}\right)^n \prod_{i=1}^{n} t_i^{b-1} e^{\sum -\left(\frac{t_i}{\eta_1}\right)^b}$$

$$\ln L(t_1 \dots t_n, \eta_1) = n \ln \frac{b}{\eta_1^b} + \sum (b-1) \ln t_i - \left(\frac{t_i}{\eta_1}\right)^b$$

$$= \underline{n \ln b} - n b \ln \eta_1 + \underline{(b-1) \sum t_i} - \sum \left(\frac{t_i}{\eta_1}\right)^b$$

$$R = \ln(L(t_1 \dots t_n, \eta_1) - \ln L(t_1, \dots t_n, \eta_2) =$$

$$= n b (\ln \eta_2 - \ln \eta_1) + \sum_{i=1}^{n} \left(\left(\frac{t_i}{\eta_2}\right)^b - \left(\frac{t_i}{\eta_1}\right)^b\right) =$$

$$= \underbrace{n b \left(\ln \frac{\eta_2}{\eta_1}\right)} + \frac{(\eta_1^b - \eta_2^b)}{\eta_1^b \eta_2^b} \left(\sum_{i=1}^{n} t_i^b\right)$$

$$-L < R < U \qquad L_1 < \sum_{i=1}^{n} t_i^b < U_1$$

$$\ln\left(\frac{L_1}{L_2}\right) < L$$

$$L = \underline{\ln\left(\frac{\alpha_2}{1-\alpha_1}\right)}, \quad U = \ln\left(\frac{1-\alpha_2}{\alpha_1}\right)$$