

Question #152

Key: A

These observations are truncated at 500. The contribution to the likelihood function is

$\frac{f(x)}{1-F(500)} = \frac{\theta^{-1}e^{-x/\theta}}{e^{-500/\theta}}$. Then the likelihood function is

$$L(\theta) = \frac{\theta^{-1}e^{-600/\theta} \theta^{-1}e^{-700/\theta} \theta^{-1}e^{-900/\theta}}{(e^{-500/\theta})^3} = \theta^{-3}e^{-700/\theta}$$

$$l(\theta) = \ln L(\theta) = -3 \ln \theta - 700\theta^{-1}$$

$$l'(\theta) = -3\theta^{-1} + 700\theta^{-2} = 0$$

$$\theta = 700/3 = 233.33.$$