

Question #246

Key: E

With $n + 1 = 16$, we need the $0.3(16) = 4.8$ and $0.65(16) = 10.4$ smallest observations. They are $0.2(280) + 0.8(350) = 336$ and $0.6(450) + 0.4(490) = 466$.

The equations to solve are:

$$0.3 = 1 - \left(\frac{\theta^\gamma}{\theta^\gamma + 336^\gamma} \right)^2 \quad \text{and} \quad 0.65 = 1 - \left(\frac{\theta^\gamma}{\theta^\gamma + 466^\gamma} \right)^2$$

$$(0.7)^{-1/2} = 1 + (336/\theta)^\gamma \quad \text{and} \quad (0.35)^{-1/2} = 1 + (466/\theta)^\gamma$$

$$\frac{(0.7)^{-1/2} - 1}{(0.35)^{-1/2} - 1} = \frac{(336/\theta)^\gamma}{(466/\theta)^\gamma}$$

$$0.282814 = (336/466)^\gamma$$

$$\ln(0.282814) = \gamma \ln(336/466)$$

$$\gamma = 3.8614.$$