

Question # 45

Answer: A

$$E(X | \theta) = \theta / 2.$$

$$\begin{aligned} E(X_3 | 400, 600) &= \int_{600}^{\infty} E(X | \theta) f(\theta | 400, 600) d\theta = \int_{600}^{\infty} \frac{\theta}{2} 3 \frac{600^3}{\theta^4} d\theta = \frac{3(600^3)}{2} \frac{\theta^{-2}}{-2} \Big|_{600}^{\infty} \\ &= \frac{3(600^3)(600^{-2})}{4} = 450. \end{aligned}$$