

Problem 74

Strategy:

One-to-one transformation

T : time in minutes for customer service representative to respond to 10 inquiries

$$T \sim \text{Uniform}[8, 12]$$

T^* : average time spent on an inquiry (minutes per customer)

$$T^* \sim \text{Uniform}\left[\frac{8}{10}, \frac{12}{10}\right]$$

$$f_{T^*}(t^*) = \frac{5}{2}$$

R : average response rate to inquiries (customers per minute)

$$T^* = R^{-1}$$

$$f_R(r) = f_{T^*}\left(\frac{1}{r}\right) \cdot \left|\frac{d}{dr} \cdot r^{-1}\right|$$

$$= \frac{5}{2} \cdot |-r^{-2}|$$

$$= \frac{5}{2 \cdot r^2} \quad \boxed{E}$$