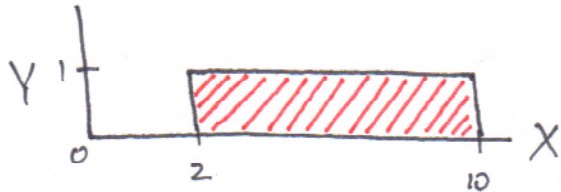


Problem 121

X: age of insured auto involved in accident

Y: length of time owner has insured auto

$$f(x,y) = \frac{1}{64}(10 - x \cdot y^2) \quad \text{for } 2 \leq x \leq 10; 0 \leq y \leq 1$$



$$E(x) = \int x \cdot f(x) \cdot dx$$

$$\begin{aligned} f(x) &= \int_0^1 \frac{1}{64}(10 - x \cdot y^2) \cdot dy = \frac{1}{64} \left(10 \cdot y - \frac{x \cdot y^3}{3} \right) \Big|_{y=0}^{y=1} \\ &= \frac{1}{64} \left(10 - \frac{x}{3} \right) \end{aligned}$$

$$\begin{aligned} E(x) &= \int_2^{10} x \cdot \frac{1}{64} \left(10 - \frac{x}{3} \right) \cdot dx = \frac{1}{64} \left(5 \cdot x^2 - \frac{x^3}{9} \right) \Big|_2^{10} \\ &= \underline{\underline{5.778}} \quad \boxed{C} \end{aligned}$$