

138. A machine consists of two components, whose lifetimes have the joint density function

$$f(x, y) = \begin{cases} \frac{1}{50}, & \text{for } x > 0, y > 0, x + y < 10 \\ 0, & \text{otherwise.} \end{cases}$$

The machine operates until both components fail.

Calculate the expected operational time of the machine.

- (A) 1.7
- (B) 2.5
- (C) 3.3
- (D) 5.0
- (E) 6.7