

89. The future lifetimes (in months) of two components of a machine have the following joint density function:

$$f(x, y) = \begin{cases} \frac{6}{125,000}(50 - x - y) & \text{for } 0 < x < 50 - y < 50 \\ 0 & \text{otherwise.} \end{cases}$$

What is the probability that both components are still functioning 20 months from now?

- (A)  $\frac{6}{125,000} \int_0^{20} \int_0^{20} (50 - x - y) dy dx$
- (B)  $\frac{6}{125,000} \int_{20}^{30} \int_{20}^{50-x} (50 - x - y) dy dx$
- (C)  $\frac{6}{125,000} \int_{20}^{30} \int_{20}^{50-x-y} (50 - x - y) dy dx$
- (D)  $\frac{6}{125,000} \int_{20}^{50} \int_{20}^{50-x} (50 - x - y) dy dx$
- (E)  $\frac{6}{125,000} \int_{20}^{50} \int_{20}^{50-x-y} (50 - x - y) dy dx$