

118. Let X and Y be continuous random variables with joint density function

$$f(x, y) = \begin{cases} 15y & \text{for } x^2 \leq y \leq x \\ 0 & \text{otherwise.} \end{cases}$$

Let g be the marginal density function of Y .

Which of the following represents g ?

(A) $g(y) = \begin{cases} 15y & \text{for } 0 < y < 1 \\ 0 & \text{otherwise} \end{cases}$

(B) $g(y) = \begin{cases} \frac{15y^2}{2} & \text{for } x^2 < y < x \\ 0 & \text{otherwise} \end{cases}$

(C) $g(y) = \begin{cases} \frac{15y^2}{2} & \text{for } 0 < y < 1 \\ 0 & \text{otherwise} \end{cases}$

(D) $g(y) = \begin{cases} 15y^{3/2}(1 - y^{1/2}) & \text{for } x^2 < y < x \\ 0 & \text{otherwise} \end{cases}$

(E) $g(y) = \begin{cases} 15y^{3/2}(1 - y^{1/2}) & \text{for } 0 < y < 1 \\ 0 & \text{otherwise} \end{cases}$