

The continuous random variable X has probability density function f given by

$$f(x) = \begin{cases} \frac{3}{16}(2 - \sqrt{x}) & 0 \leq x < 1, \\ \frac{3}{16\sqrt{x}} & 1 \leq x \leq 9, \\ 0 & \text{otherwise.} \end{cases}$$

(a) Find $E(X)$. [3]

The random variable Y is such that $Y = \sqrt{X}$.

(b) Find the probability density function of Y . [5]