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

$$f(x) = \begin{cases} \frac{1}{80} \left( 3\sqrt{x} - \frac{8}{\sqrt{x}} \right) & 4 \le x \le 16, \\ 0 & \text{otherwise.} \end{cases}$$

(i) Find the distribution function of X.

The random variable *Y* is defined by  $Y = \sqrt{X}$ .

(ii) Find the probability density function of Y. [3]

[3]