The continuous random variable X has cumulative distribution function F given by

$$F(x) = \begin{cases} 0 & x < 0, \\ \frac{1}{60}(16x - x^2) & 0 \le x \le 6, \\ 1 & x > 6. \end{cases}$$

(a) Find the interquartile range of X. [4]

(b) Find
$$E(X^3)$$
. [4]

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

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