

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

$$F(x) = \begin{cases} 0 & x < 2, \\ \frac{(x-2)^2}{12} & 2 \leq x < 4, \\ 1 - \frac{(8-x)^2}{24} & 4 \leq x \leq 8, \\ 1 & x > 8. \end{cases}$$

- (a) Sketch the graph of the probability density function of X . [3]
- (b) Find $E(X)$. [3]
- (c) Find the exact value of the interquartile range of X . [4]