

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

$$f(x) = \begin{cases} \frac{3}{4x^2} + \frac{1}{4} & 1 \leq x \leq 3, \\ 0 & \text{otherwise.} \end{cases}$$

(i) Find the distribution function of X . [3]

(ii) Find the exact value of the interquartile range of X . [5]