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3. Figure 1 shows an accurate graph of the cumulative distribution function, F(x), for the continuous random variable X

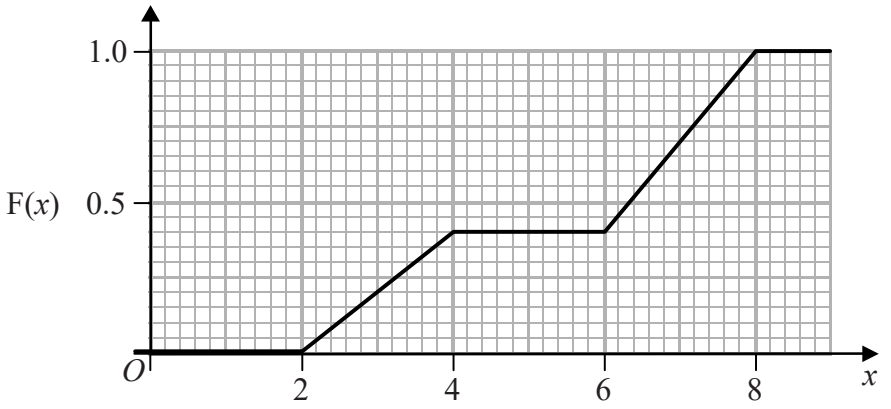


Figure 1

(a) Find $P(3 < X < 7)$

(2)

The probability density function of X is given by

$$f(x) = \begin{cases} a & 2 \leqslant x < 4 \\ b & 4 \leqslant x < 6 \\ c & 6 \leqslant x \leqslant 8 \\ 0 & \text{otherwise} \end{cases}$$

where a, b and c are constants.

(b) Find the value of a, the value of b and the value of c

(3)

(c) Find $E(X)$

(3)

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Question 3 continued

Q3

(Total 8 marks)