
- 7

$$f(x) = \begin{cases} -\frac{3}{4}(x-3)(x-5) & 3 \leq x \leq 5, \\ 0 & \text{otherwise.} \end{cases}$$

- (a)

①

[1]

.....

[2]

Additional page

If you use the following page to complete the answer to any question, the question number must be clearly shown.

[illegible]

5

$$f(x) = \begin{cases} k(2x^2 - x^3) & 0 \leq x \leq 2, \\ 0 & \text{otherwise.} \end{cases}$$

(a) Show that $k = \frac{3}{4}$.

[3]

Handwriting practice lines (dotted lines) for the letter 'd'.

The median of X is denoted by m .

- (b) (i)** Write down the value of $P(X \leq m)$. [1]

.....

.....

.....

.....

- (ii) Hence find $P(E(X) \leq X \leq m)$. [5]

Handwriting practice lines (dotted lines) for the letter 'e'.

7 X is a random variable with probability density function given by

$$f(x) = \begin{cases} (1 + \cos \pi x) & 0 \leq x \leq 1, \\ 0 & \text{otherwise.} \end{cases}$$

(a) Show that $P\left(X < \frac{1}{2}\right) = \frac{1}{2} + \frac{1}{\pi}$. [3]

[illegible]

(b) Show that $E(X) = \frac{1}{2} - \frac{2}{\pi^2}$. [5]

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Additional page

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