4. The continuous random variable G has probability density function f(g) given by

$$f(g) = \begin{cases} \frac{1}{15}(g+3) & -1 < g \leqslant 2 \\ \frac{3}{20} & 2 < g \leqslant 4 \\ 0 & \text{otherwise} \end{cases}$$

(a) Sketch the graph of f(g)

(2)

(b) Find $P\left((1 \leqslant 2G \leqslant 6) \,\middle|\, G \leqslant 2\right)$

(4)

The continuous random variable H is such that E(H) = 12 and Var(H) = 2.4

(c) Find $E\left(2H^2 + 3G + 3\right)$
Show your working clearly.
(*Solutions relying on calculator technology are not acceptable.*)

(6)

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(Total for Question 4 is 12 marks)

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