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5. The discrete random variable X has the following probability distribution

x	-2	-1	0	1	4
$\mathrm{P}(X = x)$	a	b	c	b	a

Given that $\mathrm{E}(X) = 0.5$

(a) find the value of a.

(2)

Given also that $\mathrm{Var}(X) = 5.01$

(b) find the value of b and the value of c.

(5)

The random variable $Y = 5 - 8X$

(c) Find (i) $\mathrm{E}(Y)$

(ii) $\mathrm{Var}(Y)$

(3)

(d) Find $\mathrm{P}\left(4X^2 > Y\right)$

(5)

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Question 5 continued

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(Total 15 marks)