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

x	0	2	3
$P(X = x)$	a	$2b$	b

where a and b are constants.

The cumulative distribution function of X is given by

x	0	2	3
$F(x)$	$\frac{1}{2}$	c	d

where c and d are constants.

(a) Find

(i) the value of a

(ii) the value of d

(iii) the value of b

(iv) the value of c

(6)

(b) Find

(i) $E(12X + 4)$

(3)

(ii) $Var(12X + 4)$

(4)

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Question 4 continued

(Total for Question 4 is 13 marks)