4. A discrete random variable X has the probability distribution given in the table below, where a and b are constants.

x	–1	0	1	2	3
$P(X = x)$	0.05	0.1	a	b	0.35

Given that $E(X) = 1.8$

(a) find the value of a and the value of b

(3)

(b) Specify the cumulative distribution function $F(x)$ for $x = –1, 0, 1, 2$ and 3

(2)

(c) Find $P(2X < 1)$

(1)

(d) Find $\text{Var}(5 – 3X)$
You must show your working.

(4)

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Question 4 continued

(Total for Question 4 is 10 marks)