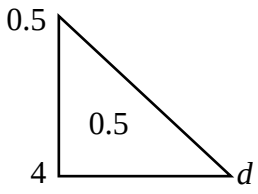
Question Number	Scheme	Marks
2 (a)	[Mode =] 4	B1
		(1)
(b)	$\left[a\int_0^4 x^3\mathrm{d}x = \frac{1}{2} \Rightarrow\right] a\left[\frac{x^4}{4}\right]_0^4 = \frac{1}{2}$	M1
	$64a = \frac{1}{2} \Rightarrow a = \frac{1}{128}$ *	A1*
		(2)
(c)	 $\frac{1}{2}\times\frac{1}{2}\times(d-4)=\frac{1}{2}$ or $\frac{1}{2}\times\frac{1}{2}\times(d-4)+\int_0^4 ax^3\mathrm{d}x=1$	M1
	$d = 6$	A1
		(2)
(d)	$b = \frac{-\frac{1}{2}}{'6'-4}\left[=-\frac{1}{4}\right]$ $4b+c=0.5$ oe	M1
	$0='-\frac{1}{4}'\times'6'+c$ or $\frac{1}{2}='-\frac{1}{4}'\times 4+c$ $10b+2c=0.5$ oe or $'6'b+c=0$ oe	M1
	$b=-\frac{1}{4}$ and $c=\frac{3}{2}$	A1
		(3)
	Notes	**Total 8**

(a)	**B1**	Cao
(b)	**M1**	For integrating the 1st line of the pdf and setting = 0.5 Ignore limits
	A1*	Answer is given so a correct solution must be seen with no errors. There must be at least one line of correct working from the M mark to the final answer.
		Mark parts c and d together
(c)	**M1**	For setting the area of the triangle = 0.5
	A1	Cao
(d)	**M1**	A correct method for finding *b* ft their *d* value or $4b+c=0.5$ oe (this may be seen any part of this question) Allow $4b+c=64a$
	M1	A correct method for finding *c* ft their *b* and *d* value or $10b+2c=0.5$ oe or $'d'\times b+c=0$ oe (these may be seen any part of this question) Allow $db+c=0$
	A1	For both *b* and *c* correct **NB** *b* = - 0.25 oe and *c* = 1.5 oe will score 3/3