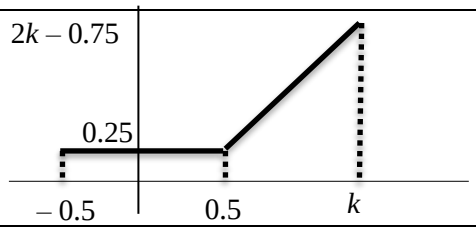
Question Number	Scheme	Marks
2 (a)		M1 A1
		(2)
(b)	Area = $\frac{1}{4}+\frac{1}{2}\left(\frac{1}{4}+2k-\frac{3}{4}\right)\left(k-\frac{1}{2}\right)=1$ **or** $\frac{1}{4}\left(k+\frac{1}{2}\right)+\frac{1}{2}(2k-1)\left(k-\frac{1}{2}\right)=1$ **or** $\frac{1}{4}+\left[\left(k^2-\frac{3}{4}k\right)-\left(\frac{1^2}{2}-\frac{3}{8}\right)\right]=1$	M1
	$8k^2-6k-5=0$ or $k^2-\frac{3}{4}k-\frac{5}{8}=0$ oe	A1
	$(4k-5)(2k+1)=0$ or $k=\frac{\frac{3}{4}\pm\sqrt{\left(-\frac{3}{4}\right)^2+4\times\left(\frac{5}{8}\right)}}{2}$ oe	M1
	$k = 1.25$*	A1 *
		(4)
(c)	$\left[\int_{-0.5}^{0.5}\frac{1}{4}x\,\mathrm{d}x\right]+\int_{0.5}^{1.25}2x^2-\frac{3}{4}x\,\mathrm{d}x=[0]+\left[\frac{2x^3}{3}-\frac{3}{8}x^2\right]_{0.5}^{1.25}$	M1A1
	$=\left(\frac{2\times1.25^3}{3}-\frac{3}{8}\times1.25^2\right)-\left(\frac{2\times0.5^3}{3}-\frac{3}{8}\times0.5^2\right)$	dM1
	$=\frac{93}{128}$ awrt 0.727	A1
		(4)
(d)	$[Q_1 =]$ 0.5	B1
	$Q_3^2-\frac{3}{4}Q_3+0.125=0.5$ or $Q_3^2-\frac{3}{4}Q_3-0.375=0$ oe	M1
	$Q_3=\frac{\frac{3}{4}\pm\sqrt{\left(-\frac{3}{4}\right)^2+4\times\left(\frac{1}{8}\right)}}{2}$	M1
	IQR ="1.093…" – 0.5	M1
	= 0.593… awrt 0.59	A1
		(5)

	Notes	Total 15
(a)	**M1**	A correct shape. Must not go below zero
	A1	A correct shape including labels. Allow 1.25 for k and 1.75 for $2k – 0.75$
(b)	**M1**	Equating area to 1 (0.75 if ¼ + is not present) A correct method to find the area - allow 1 sign error. May be implied by a correct 3 term quadratic. If using integration then must get to an equivalent equation as the main scheme
	A1	For a correct 3 term quadratic
	M1	A correct method to solve a 3 term quadratic (May be implied by 1.25 **and** –0.5) If the 3 term quadratic is incorrect then a correct method for solving their 3 term quadratic must be shown
	A1*	1.25 must be the only answer given. All previous marks must be awarded.
(c)	**M1**	$\int_{-0.5}^{0.5}\frac{1}{4}x\,\mathrm{d}x+\int_{0.5}^{1.25}2x^2-\frac{3}{4}x\,\mathrm{d}x$ or $\int_{0.5}^{1.25}2x^2-\frac{3}{4}x\,\mathrm{d}x$ on its own

	A1	Correct integration of $2x^2 - \frac{3}{4}x$
	dM1	Dep on previous M being awarded. Substituting in the correct limits (implied by $\frac{93}{128}$ or awrt 0.727 Condone 0.726) If the integration is incorrect, we must see the correct non simplified substitution into their integral. Ignore substitution into $\frac{1}{8}x^2$. Useful values to look for are $\frac{125}{96}, \frac{75}{128}, \frac{1}{12}$ and $\frac{3}{32}$ or $\frac{275}{384}$ and $\pm\frac{1}{96}$
	A1	For $\frac{93}{128}$ or awrt 0.727
(d)	**B1**	For 0.5 May be seen in their IQR
	M1	A correct equation for finding Q_3
	M1	A correct method to solve a 3 term quadratic (implied by $Q_3 = \frac{3+\sqrt{33}}{8}$ or $\frac{3-\sqrt{33}}{8}$ or awrt 1.093 or awrt – 0.343) If the 3 term quadratic is incorrect then a correct method for solving their 3 term quadratic must be shown. If using $Q_3^2 - \frac{3}{4}Q_3 - \frac{5}{8} = 0$ then M0
	M1	Correct method to find the IQR ft their Q_3 or implied by awrt 0.593
	A1	awrt 0.59 Allow $\frac{-1+\sqrt{33}}{8}$