Question Number	Scheme	Marks
4 (a)	$F(10)=1 \Rightarrow -k(100-200+52)=1$ **or** $F(6)=\frac{2}{3} \Rightarrow -k(36-120+52)=\frac{2}{3}$	M1
	$48k=1$ leading to $k=\frac{1}{48}$ *	A1*
		(2)
(b)	$[P(X=4)=]0$	B1
		(1)
(c)	F(4.5) – F(2.5) + F(8.5) – F(5.5)	M1
	$\frac{1}{6}(4.5-2)-\frac{1}{24}(2.5-1)^2-\frac{1}{48}(8.5^2-20\times 8.5+52)-\frac{1}{6}(5.5-2)$ $\left[=\frac{5}{12}-\frac{3}{32}+\frac{61}{64}-\frac{7}{12}\right]$	M1
	$=\frac{133}{192}$	A1
		(3)
(d)	Attempt to differentiate either function	M1
	$[r(x)=]\frac{1}{12}(x-1)=\frac{1}{12}x-\frac{1}{12}$	A1
	$[s(x)=]\frac{1}{24}(10-x)=\frac{5}{12}-\frac{1}{24}x$	A1
		(3)
		Total 9

		Notes
(a)	**M1**	For using F(10) = 1 or F(6) = $\frac{2}{3}$
	A1*	Fully correct solution with substitution seen leading to $k=\frac{1}{48}$
(b)	**B1**	cao
(c)	**M1**	For writing or using F(4.5) – F(2.5) implied by $\frac{31}{96}$ **or** F(8.5) – F(5.5) implied by $\frac{71}{192}$
	M1	For a fully correct method with values substituted into correct part of cdf
	A1	Allow awrt 0.693
(d)	**M1**	Attempt to differentiate either function with $x^n \rightarrow x^{n-1}$ (implied by either correct answer)
	A1	A correct expression for r(x) oe
	A1	A correct expression for s(x) oe