6			$\frac{2x-1}{(2x+3)(x+1)^2} \equiv \frac{A}{2x+3}+\frac{B}{x+1}+\frac{C}{(x+1)^2}$	**B1**	**3.1a**	Correct form for partial fractions – may be awarded later or implied by later working	Check carefully for their labelling of their A, B and C
			$2x-1 \equiv A(x+1)^2+B(2x+3)(x+1)+C(2x+3)$	**M1***	**1.1a**	Allow sign errors only – this mark can be implied by at least one correct value www	
			$x=-1 \Rightarrow C=-3$	**A1**	**1.1**	www	
			$x=-\frac{3}{2} \Rightarrow A=-16$	**A1**	**1.1**	www	
			$x=0 \Rightarrow B=8$	**A1**	**1.1**	www $\quad -\frac{16}{2x+3}+\frac{8}{x+1}-\frac{3}{(x+1)^2}$	
			$\int\left(\frac{-16}{2x+3}+\frac{8}{x+1}-\frac{3}{(x+1)^2}\right)\mathrm{d}x$ $= a\ln(2x+3)+b\ln(x+1)+c(x+1)^{-1}$	**M1dep***	**2.1**	Any non-zero values for a, b and c (from correct form of pf – no additional terms) – allow use of modulus instead of brackets throughout – condone omission of brackets throughout if recovered later	All signs may have been swapped (in advance of calculating area)
			$=-8\ln(2x+3)+8\ln(x+1)+3(x+1)^{-1}$	**A1**	**1.1**	All correct, may be un-simplified	Limits not required for this or previous mark
			$=\left(-8\ln 4+8\ln\frac{3}{2}+2\right)-\left(-8\ln 3+3\right)$	**M1dep***	**3.1a**	Correct use of the correct limits of 0 and $\frac{1}{2}$ Allow $\pm\left(\mathrm{F}\left(\frac{1}{2}\right)-\mathrm{F}(0)\right)$	Dependent on all previous M marks
			$=8\ln\frac{3}{2}+8\ln 3-8\ln 4-1=8\ln\left(\frac{\frac{3}{2}\times 3}{4}\right)-1$	**M1**	**2.1**	Correctly combining their log terms to a single log term– dependent on correct use of the correct limits and two log terms only (of the form $a\ln(2x+3)+b\ln(x+1)$)	Must be using 0.5 and 0 as limits
			Integral is $8\ln\frac{9}{8}-1 \Rightarrow$ Area $=1+8\ln\frac{8}{9}$	**A1**	**3.2a**	Final answer must be positive (as it is an area) www	$p=1,\ q=8,\ r=\frac{8}{9}$
				[10]			

		ALT	$\dfrac{2x-1}{(2x+3)(x+1)^2} \equiv \dfrac{A}{2x+3} + \dfrac{Bx+C}{(x+1)^2}$	B1		Correct form for partial fractions – may be awarded later or implied by later working	
			$2x-1 \equiv A(x+1)^2 + (2x+3)(Bx+C)$	M1*		Allow sign errors only – this mark can be implied by at least one correct value www	
			$A = -16$	A1		www	
			$B = 8$	A1		www	
			$C = 5$	A1		www $\dfrac{2x-1}{(2x+3)(x+1)^2} \equiv -\dfrac{16}{2x+3} + \dfrac{8x+5}{(x+1)^2}$	
			$\int \dfrac{8x+5}{\left(x+1\right)^2}\,dx$ e.g. using the substitution $u = x+1$ gives $\int \dfrac{8\left(u-1\right)+5}{u^2}\,du = \int \dfrac{8}{u} - \dfrac{3}{u^2}\,du = 8\ln u + \dfrac{3}{u}$	M1dep*		Correct method for integrating $\dfrac{8x+5}{\left(x+1\right)^2}$ leading to an expression of the form $\pm\alpha \ln u \pm \dfrac{\beta}{u}$ (oe for their correct method)	
			$= -8\ln(2x+3) + 8\ln(x+1) + 3(x+1)^{-1}$ or $= -8\ln\left(2x+3\right) + 8\ln u + \dfrac{3}{u}$	A1		All correct, may be un-simplified	Limits not required for this or previous mark
			$= \left(-8\ln 4 + 8\ln\tfrac{3}{2} + 2\right) - \left(-8\ln 3 + 3\right)$	M1dep*		Correct use of the correct limits of 0 and $\tfrac{1}{2}$ for x and 1 and $\tfrac{3}{2}$ if integrated expression still in terms of u (oe) (as in the main scheme allow limits applied either way round)	Dependent on all previous M marks
			$= 8\ln\tfrac{3}{2} + 8\ln 3 - 8\ln 4 - 1 = 8\ln\left(\dfrac{\tfrac{3}{2}\times 3}{4}\right) - 1$	M1		Correctly combining their log terms to a single log term– dependent on correct use of the correct limits and two log terms only (of the form $a\ln(2x+3) + b\ln(x+1)$)	Must be using 0.5 and 0 as limits
			Integral is $8\ln\tfrac{9}{8} - 1 \Rightarrow$ Area $= 1 + 8\ln\tfrac{8}{9}$	A1 [10]		Final answer must be positive (as it is an area) www	$p = 1,\ q = 8,\ r = \tfrac{8}{9}$