

Q	Marking instructions	AO	Mark	Typical solution
7(a)	Forms $4x + 3 \equiv A(x - 1) + B$	1.1b	B1	$\frac{4x + 3}{(x - 1)^2} \equiv \frac{A}{x - 1} + \frac{B}{(x - 1)^2}$ $4x + 3 \equiv A(x - 1) + B$
	Uses substitution or comparison of coefficients to find their A or B (must have degree of LHS = degree of RHS)	1.1a	M1	Let $x = 1$ hence $B = 7$ Let $x = 0$ then $3 = B - A$ and hence $A = 4$
	Obtains correct A and B	1.1b	A1	$A = 4$ and $B = 7$
7(b)	Integrates their expression, at least one term correct	3.1a	M1	$\int_3^4 \left(\frac{4}{x - 1} + \frac{7}{(x - 1)^2} \right) dx$ $= \left[4 \ln(x - 1) - \frac{7}{x - 1} \right]_3^4$ $= \left[4 \ln 3 - \frac{7}{3} \right] - \left[4 \ln 2 - \frac{7}{2} \right]$ $= 4 \ln \frac{3}{2} + \frac{7}{6}$ $= \ln \frac{3^4}{2^4} + \frac{7}{6}$ $= \ln \frac{81}{16} + \frac{7}{6}$
	Integrates their expression fully correctly Must be of the form $A \ln(x - 1) - \frac{B}{x - 1}$ OE FT their A and B	1.1b	A1F	
	Substitutes limits correctly into their integrated expression	1.1a	M1	
	Uses at least one law of logs correctly	1.1a	M1	
	Completes argument to obtain correct exact answer in correct form or stating $p = \frac{7}{6}$ and $q = \frac{81}{16}$ No subsequent incorrect working	2.1	R1	
Total			8	