

Q	Marking instructions	AO	Marks	Typical solution
4	Obtains $\ln(x + 1)(x - 1)$ Or $\ln(x^2 - 1)$ PI by correct equation in $x^2$ Condone missing brackets	1.1b	B1	$\ln(x + 1)(x - 1)$  $= \ln 15 - \ln 49$  $= \ln \frac{15}{49}$
	Obtains $\ln 49$ or $\ln 7^2$ for $2 \ln 7$ PI by correct equation in $x^2$	1.1b	B1	$x^2 - 1 = \frac{15}{49}$
	Applies subtraction rule for $\ln$ to right-hand side PI by correct equation in $x^2$	1.1a	M1	$x^2 = \frac{64}{49}$
	Obtains correct exact value for $x^2$ PI	1.1b	A1	$x = \frac{8}{7}$
	Explains why $x = -\frac{8}{7}$ is not a valid solution. Must refer to $\ln(-ve)$	2.4	E1	$x$ cannot be $-\frac{8}{7}$ because the $\ln$ functions would not exist with this value
<b>Question 4 Total</b>			<b>5</b>	