Question	Scheme	Marks	AOs
1	$6(1+2\sinh^2 x)+4\sinh x=7$ and rearranges to quadratic form OR substitutes correct exponential identifies and rearranges to quartic in e^x, $\cosh 2x=\frac{e^{2x}+e^{-2x}}{2}$ and $\sinh x=\frac{e^x-e^{-x}}{2}$ used.	M1	3.1a
	$12\sinh^2 x+4\sinh x-1=0$ OR $3e^{4x}+2e^{3x}-7e^{2x}-2e^x+3=0$	A1	1.1b
	$(6\sinh x-1)(2\sinh x+1)=0\Rightarrow \sinh x=\ldots$ OR $(e^{2x}+e^x-1)(3e^{2x}-e^x-3)=0\Rightarrow e^x=\ldots.$	M1	1.1b
	$\sinh x=\frac{1}{6}$ or $\sinh x=-\frac{1}{2}$ OR $e^x=\frac{-1\pm\sqrt{5}}{2}$ or $e^x=\frac{1\pm\sqrt{37}}{6}$	A1	1.1b
	$x=\ln\left(a+\sqrt{1+a^2}\right)$ where a is one of their $\sinh x$ values OR undoes exponentials using ln	M1	1.2
	$x=\ln\left(\frac{1+\sqrt{37}}{6}\right)$, $x=\ln\left(\frac{-1+\sqrt{5}}{2}\right)$	A1	1.1b
		(6)	
		(6 marks)	

Notes:

M1: Identifies a correct approach to solving the problem, either through use of identity or definition of hyperbolics

A1: Reaches a correct quadratic in $\sinh x$ or a correct quartic in e^x.

M1: Solves their quadratic/quartic, may just see answers from calculator.

A1: Correct values for $\sinh x$ or e^x found.

M1: Correct process of reaching x from their solutions in $\sinh x$ or e^x.

A1: Correct answers as exact simplified logarithms, and no others (in the alternative the negative exponential cases must have been rejected).