Question	Scheme		Marks	AOs
5(a)	$sin\, y = x \Rightarrow cos\, y \dfrac{dy}{dx} = 1$	$sin\, y = x \Rightarrow \dfrac{dx}{dy} = cos\, y$	M1	1.1b
	Uses $sin^2 y + cos^2 y = 1 \Rightarrow cos\, y = \sqrt{1 - sin^2 y} \Rightarrow \sqrt{1 - x^2}$		M1	2.1
	$\frac{dy}{dx} = \frac{1}{\sqrt{1-x^2}}$ * cso		A1*	1.1b
			(3)	
(b)	Using the answer to (a) $f'(x) = \dfrac{1}{\sqrt{1 - e^{2x}}} \times \ldots$	Restart $sin\, y = e^x \Rightarrow cos\, y \dfrac{dy}{dx} = e^x$	M1	3.1a
	$f'(x) = \dfrac{1}{\sqrt{1 - e^{2x}}} \times e^x$	$f'(x) = \dfrac{e^x}{cos\, y}$	A1	1.1b
	$e^x \neq 0$ (or $e^x > 0$) therefore, there are no stationary points Alternatively, $e^x = 0$ leading to $x = ln\, 0$ which is impossible/undefined therefore there are no stationary points.		A1	2.4
			(3)	
			(6 marks)	

Notes:

(a)

M1: Finds x in terms of y and differentiates

M1: Uses the trig identity $sin^2 y + cos^2 y = 1$ to express $cos\, y$in terms of x. This may be seen in their derivative or stated on the side

A1*: Correctly achieves the printed answer $\frac{dy}{dx} = \frac{1}{\sqrt{1-x^2}}$. cso

(b)

M1: Differentiates using the chain rule to achieve the correct form, condone $f'(x) = \frac{1}{\sqrt{1-e^{2x}}}$

Note $f'(x) = \frac{1}{\sqrt{1-e^x}}$ is B0 for incorrect form

Alternatively restart, finds x in terms of y and differentiates

A1: Correct differentiation

A1: Follows correct differentiation. States that as $e^x \neq 0$ (or $e^x > 0$) or no solutions to$e^x = 0$ therefore there are no stationary points.

Alternatively, $e^x = 0$ leading to $x = ln\, 0$ which is impossible/undefined/error therefore there are no stationary points. Ignore any reference to the denominator = 0