4: $y = \operatorname{arsinh} x + \operatorname{arsinh}\left(\frac{1}{x}\right) \qquad x > 0$

(a) Show that

$$\frac{dy}{dx} = \frac{x - 1}{x\sqrt{1 + x^2}}$$

(2)

(b) Hence determine the exact value of y for which $\frac{dy}{dx} = 0$, giving your answer as a simplified natural logarithm.

(3)

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Question 4 continued

(Total for Question 4 is 5 marks)