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1. (a) Using the definitions of hyperbolic functions in terms of exponentials, show that

$$1 - \tanh^2 x \equiv \operatorname{sech}^2 x$$

(3)

(b) Solve the equation

$$2\operatorname{sech}^2 x + 3\tanh x = 3$$

giving your answer as an exact logarithm.

(3)

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Question 1 continued

Q1

(Total 6 marks)