<u>Hyperbolic functions – A2 Further Mathematics P1</u>

1. June/2022/Paper_7367/01/No.3

Given that $y = \operatorname{sech} x$, find $\frac{\mathrm{d}y}{\mathrm{d}x}$

Tick (✓) one box.

[1 mark]

| sech x tanh x | |
|-------------------|--|
| - sech x tanh x | |
| cosech x coth x | |
| - cosech x coth x | |

| 2. Julic/2022/1 apci /30//01/110. | '01/No.6 | 7367/ | /Paper | June/2022 | 2. |
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(a) Given that |x| < 1, prove that

| $\tanh^{-1} x = \frac{1}{2} \ln \left(\frac{1+x}{1-x} \right)$ | [4 marks] |
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(b) Solve the equation

 $20 \operatorname{sech}^2 x - 11 \tanh x = 16$

| Give your answer in logarithmic form. | [4 marks] |
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