Exercise 14.5-1 (Laws of Logarithms - Year 1 Pure Maths)

1 (a) Given that $\log_3(x+1) - 2\log_3(x-1) = 1$, show that $3x^2 - 7x + 2 = 0$. *(4 Marks)*

(b) Hence or otherwise, solve the equation $\log_3(x+1) - 2\log_3(x-1) = 1$. Given than $x > 1$. *(2 Marks)*

Link to Solutions: https://youtu.be/QpMsC1cNvJI

2 (a) Without using a calculator, solve the equation $\log_5 x = 16 \log_x 5$. *(3 Marks)*

(b) Without using a calculator, evaluate $\log 6 + \log 4 + \log 20 - \log 3 - \log 16$ *(3 Marks)*

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3 (a) Without using a calculator, solve the equation, $\log_x 9 + \log_{x^2} 3 = 2.5$ *(5 Marks)*

(b) Given that $\log_9 x = m$ and $\log_{\sqrt{3}} y = n$, express the following as powers of 3.

(i) xy (ii) $\frac{x^2}{y}$ *(6 Marks)*

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