H1 Mathematics

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Graphing Techniques

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Exponential and Logarithmic Functions

1. Given that $\log_2 x = p$ and $\log_8 y = q$, express the following terms of p and/or q:

   (a) $\log_2 xy$

   Sol.

   $$\begin{aligned}
   \log_8 y &= q \\
   \frac{\log_2 y}{\log_2 8} &= q \\
   \frac{\log_2 y}{3} &= q \\
   \log_2 y &= 3q
   \end{aligned}$$

   $$\begin{aligned}
   \log_2 xy &= \log_2 x + \log_2 y \\
   &= p + 3q
   \end{aligned}$$

   (b) $\log_4 \frac{x}{y}$

   (c) $log_x 4y$

   (d) $x^2 y$

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