



Air maths tuition

Interact, engage and perform

Logs - How to solve equations where x is in the power

$3^{2x} = 12$ $\therefore x = \log_3 12$ $= 2.2618\dots$ $= 2.26 \text{ (3sf)}$ <p>or $\log_3 3^{2x} = \log_3 12$</p> $\therefore x \log_3 3 = \log_3 12$ $\therefore x = \frac{\log_3 12}{\log_3 3}$ $= 2.26 \text{ (3sf)}$ <p>* any base</p>	<div style="border: 1px solid red; padding: 5px; display: inline-block;">$\log_a N = x$$a^x = N$</div> $3^{2x-1} - 4^{x+3} = 0$ $\therefore 3^{2x-1} = 4^{x+3}$ $\therefore \log 3^{2x-1} = \log 4^{x+3}$ $\therefore (2x-1)\log 3 = (x+3)\log 4$ $\therefore 2x\log 3 - \log 3 = x\log 4 + 3\log 4$ $\therefore x(2\log 3 - \log 4) = 3\log 4 + \log 3$ $\therefore x = \frac{3\log 4 + \log 3}{2\log 3 - \log 4}$ $= 6.483\dots$ $= 6.48 \text{ (3sf)}$
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