

Question			Answer	Mark	AO	Guidance
6	(a)		DR $\log_3(x + 32) - \log_3 x - \log_3 2 + \log_3 2 = 2$ $\log_3\left(\frac{x + 32}{x}\right) = 2$	M1 M1	3.1a 2.1	Correct use of $\log(ab) = \log a + \log b$ Correct use of $\log\left(\frac{a}{b}\right) = \log a - \log b$ These first two M marks may appear in either order.
			Alternative method for M1M1: $\log_3\left(\frac{2(x + 32)}{2x}\right) = 2$	M2		Must see 'handling' of 2 in numerator and denominator to award these marks in one step (e.g. writing and cancelling)
			$\frac{x + 32}{x} = 9 \text{ or } 3^2$ $x = 4$	M1 A1	1.1 1.1	Correctly remove logs from their equation Dependent on all 3 method marks.
			Alternative method: $\log_3\left(\frac{x+32}{2x}\right) + \log_3 2 = 2$ $\log_3\left(\frac{x+32}{2x}\right) = 2 - \log_3 2$ $\frac{x+32}{2x} = 3^{2-\log_3 2} \left[= \frac{3^2}{3^{\log_3 2}} \right]$ $\frac{x+32}{2x} = \frac{9}{2} [= 4.5] \text{ or } \frac{x+32}{x} = 9$ $x = 4$	M1 M1 M1 A1		Correct use of $\log\left(\frac{a}{b}\right) = \log a - \log b$ Correctly remove logs from all terms involving x Correctly evaluate and remove all remaining logs Dependent on all 3 method marks.
				[4]		NB candidates who do not show 'handling' of the terms in $\log_3 2$ can score max. 2/4
			DR $y^{-\frac{3}{2}} = \frac{1}{8} \text{ oe}$	M1	1.1	Correctly removing log.
			$y = \left(\frac{1}{8}\right)^{-\frac{2}{3}} \text{ or } y = \sqrt[3]{\frac{1}{8}}$ or $y^{\frac{3}{2}} = 8 \Rightarrow y = 8^{\frac{2}{3}}$ $y = 4$	M1 A1 [3]	2.1 1.1	Manipulate to solvable form - must be correct for their equation. An intermediate step must be seen (between first M1 and solution) otherwise M1M0A0. www
6	(b)					