Question number	Scheme	Marks
1	$3\log_3 x - 8\log_x 3 = 10 \Rightarrow 3\log_3 x - 8\dfrac{\log_3 3}{\log_3 x} - 10 = 0$	M1
	$\Rightarrow 3(\log_3 x)^2 - 10(\log_3 x) - 8 = 0$	M1
	OR : $3\dfrac{\log_x x}{\log_x 3} - 8\log_x 3 = 10 \Rightarrow 3 - 8(\log_x 3)^2 = 10\log_x 3$	
	$(3\log_3 x + 2)(\log_3 x - 4) = 0 \Rightarrow \log_3 x = -\dfrac{2}{3}, 4$	
	OR: $(4\log_x 3 - 1)(2\log_x 3 + 3) = 0 \Rightarrow \log_x 3 = \dfrac{1}{4}, -\dfrac{3}{2}$	M1A1
	$x = 3^4 = 81 \quad x = 3^{-\frac{2}{3}} \left[= \dfrac{1}{\sqrt[3]{9}} = \dfrac{\sqrt[3]{9}}{9} \approx 0.4807... \right]$	M1A1 [6]
M1	Use correct change of base formula so that all logs have the same base. May have 1 instead of $\log_3 3$ or $\log_x x$	
M1	Obtain a corresponding 3TQ, brackets here can be implied by subsequent working	
M1	Solve their 3TQ to $\log_3 x = ...$ or $\log_x 3 = ...$ If a substitution has been used it must be reversed before this mark can be awarded.	
A1	Either correct answer obtained	
M1	"Undo" at least one log correctly and obtain at least one value for x	
A1	2 correct values for x. These can be in any form inc decimals (min 3 sf)	
NB	This question can be solved using any base. For the first M mark all logs must have the same base and at least one change of base must be correct. If in doubt about the marking, send to review.	