Question number	Scheme	Marks
3 (a)	$\log_3 9 = 2$	B1 [1]
(b)	$\log_3 9t = \log_9\left(\frac{12}{t}\right)^2 + 2 \Rightarrow \log_3 9 + \log_3 t = 2\left(\log_9 12 - \log_9 t\right) + 2$	M1M1
	$\log_3 9 + \log_3 t = 2\left(\frac{\log_3 12}{\log_3 9} - \frac{\log_3 t}{\log_3 9}\right) + 2$	M1
	$\Rightarrow \log_3 9 + \log_3 t = \log_3 12 - \log_3 t + 2$	
	$\Rightarrow 2\log_3 t = \log_3 12 \Rightarrow \log_3 t^2 = \log_3 12$	A1
	$\Rightarrow t^2 = 12 \Rightarrow t = 2\sqrt{3}$	M1A1 [6]
		Total 7 marks

(a)
B1 $\left(\log_3 9 =\right) 2$

(b) **The M marks can be seen anywhere in the solution**

M1 Use of $\log AB = \log A + \log B$ or $\log\frac{A}{B} = \log A - \log B$

M1 Use of $\log A^n = n\log A$

M1 Use of $\log_a x = \frac{\log_b x}{\log_b a}$

A1 Simplifying to $2\log_3 t = \log_3 12$ oe or $\log_3\left(\frac{9t^2}{12}\right) = 2$ oe

M1 Simplify to $t^2 = ...$

A1 $t = 2\sqrt{3}$