Question	Scheme	Marks	AOs
11	$2\log_6(x+3) = 2 - \log_6(4-x)$		
	Uses the power law $\log_6(x+3)^2 = 2 - \log_6(4-x)$	M1	1.1b
	Uses the addition law $\log_6((x+3)^2(4-x)) = 2$	M1	1.1b
	Removes the log $(x+3)^2(4-x) = 36$	M1	1.1b
	Expands to a cubic in x $-x^3 - 2x^2 + 15x + 36 = 36$	dddM1	3.1a
	Correct cubic expression = 0 $x^3 + 2x^2 - 15x = 0$	A1	1.1b
	Factorises and solves $x(x+5)(x-3) = 0 \Rightarrow x = \ldots$	M1	1.1b
	$x = 0,\ x = 3$ only	A1	2.3
		(7)	

(7 marks)

Notes:

M1: Uses the power law of logs $2\log_6(x+3) = \log_6(x+3)^2$

M1: Uses the addition law of logs following the above $\log_6(x+3)^2 + \log_6(4-x) = \log_6((x+3)^2(4-x))$

Alternatively uses the subtraction law following use of $2 = \log_6 36$, i.e., $2 - \log_6(4-x) = \log_6 \frac{36}{4-x}$

M1: Removes the log or converts 2 into $\log_6 36$. Look for 2 going to 36.

dddM1: For attempting to expand their three brackets to achieve a cubic in x

A1: For a correct cubic expression in x, set = 0

M1: For the correct method of solving their cubic $= 0$. May be implied by sight of two values for x from this cubic, i.e., two from $x = 0,\ x = 3,\ x = -5$

A1: $x = 0,\ x = 3$ only.