

Question	Scheme	Marks	AOs
9	$3 = \log_3 27$ or $2\log_3 \sqrt{x} = \log_3 x$	M1	1.1b
	e.g. $\log_3(2x+3)(x-4) = \log_3 27x$	M1	1.1b
	$(2x+3)(x-4) = 27x$	A1	2.1
	$2x^2 - 32x - 12 = 0 \Rightarrow x^2 - 16x - 6 = 0 \Rightarrow x = \dots$	M1	1.1b
	$8 + \sqrt{70}$ only	A1	2.3
		(5)	

(5 marks)

### Notes

M1: Uses  $3 = \log_3 27$  or  $2\log_3 \sqrt{x} = \log_3 x$  (may be implied)

M1: Uses the addition or subtraction law of logarithms at least once

A1: A correct equation with logarithms correctly removed e.g.  $(2x+3)(x-4) = 27x$ . Do not allow this mark for e.g.  $\frac{\log_3(2x+3)(x-4)}{\log_3 27x} = 0 \Rightarrow \frac{(2x+3)(x-4)}{27x} = 1$  where the correct equation came from incorrect working.

M1: Attempts to solve their three-term quadratic (usual rules apply for solving a quadratic). If the root is via a calculator you will need to check this. Accept rounded decimals to 3sf.

A1:  $8 + \sqrt{70}$  only