QUESTION NUMBER

3.

DO NOT WRITE IN THIS MARGIN

$$\log_5 x - \log_5 3 = 2\log_5 5$$

$$\log_5 \left(\frac{x}{3}\right) = \log_5 5^2$$

$$\frac{x}{3} = 25$$

$$x = 75$$

Question	Generic scheme	Illustrative scheme	Max mark
3.	**Method 1** •1 apply $\log_5 x - \log_5 y = \log_5 \frac{x}{y}$ •2 write in exponential form •3 process for x	**Method 1** •1 $\log_5 \frac{x}{3}\ldots$ •2 $\frac{x}{3} = 5^2$ •3 75	**3**
	Method 2 •1 apply $\log_5 x - \log_5 y = \log_5 \frac{x}{y}$ •2 apply $m\log_5 x = \log_5 x^m$ •3 process for x	**Method 2** •1 $\log_5 \frac{x}{3}\ldots$ •2 $\ldots = \log_5 5^2$ •3 75	**3**

Notes:

1. Each line of working must be equivalent to the line above within a valid strategy, however see Candidates A and B for exceptions.
2. Where candidates do not use exponentials at •2 , •3 is not available – see Candidate C.

Commonly Observed Responses:

Candidate A – incorrect exponential

$\log_5 \frac{x}{3} = 2$	•1 ✓
$\frac{x}{3} = 2^5$	•2 ✗
$x = 96$	•3 ✓1

Candidate B

$\log_5 3x = 2$	•1 ✗
$3x = 5^2$	•2 ✓1
$x = \frac{25}{3}$	•3 ✓1

Candidate C – no use of exponentials

$\log_5 \frac{x}{3} = 2$	•1 ✓
$\frac{x}{3} = 10$	•2 ✗
$x = 30$	•3 ✗