logsy=logskxn = logsk + logsx"

y= mx +c

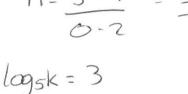
 $y = 125x^{-2}$

$$m\chi + c$$

$$n = \frac{3 - 1}{0 - 2} = \frac{4}{-2} = -2$$

53 = K

K=125



n=gradient

logsk = y intercept





Question		Generic scheme	Illustrative scheme	Max mark
7.		Method 1	Method 1	5
		•¹ state equation of line	$\bullet^1 \log_5 y = -2\log_5 x + 3$	
		•² introduce logs	$\bullet^2 \log_5 y = -2\log_5 x + 3\log_5 5$	
		•³ use laws of logs	$\bullet^3 \log_5 y = \log_5 x^{-2} + \log_5 5^3$	
		• ⁴ use laws of logs	$\bullet^4 \log_5 y = \log_5 5^3 x^{-2}$	
		• 5 state k and n	\bullet^5 $k = 125, n = -2$	
		Method 2	Method 2	
		•¹ state equation of line	$\bullet^1 \log_5 y = -2\log_5 x + 3$	
		•² use laws of logs		
		•³ use laws of logs	$\bullet^3 \log_5 \frac{y}{x^{-2}} = 3$	
		• ⁴ use laws of logs	$\bullet^4 \frac{y}{x^{-2}} = 5^3$	
		•5 state k and n	•5 $k = 125, n = -2$	
		Method 3	Method 3 The equations at •¹, •², and •³ must be stated explicitly.	
		• introduce logs to $y = kx^n$	$\bullet^1 \log_5 y = \log_5 kx^n$	
		•² use laws of logs	$\bullet^2 \log_5 y = n\log_5 x + \log_5 k$	
		•³ interpret intercept	$\bullet^3 \log_5 k = 3$	
		•4 use laws of logs	• ⁴ $k = 125$	
		• ⁵ interpret gradient	\bullet^5 $n=-2$	

Question		Generic scheme	Illustrative scheme	Max mark			
7.	(continued)						
		Method 4	Method 4				
		•¹ interpret point on log graph	• $\log_5 x = 0$ and $\log_5 y = 3$				
		•² convert from log to exponential form	• $x = 1, y = 5^3$				
		•³ interpret point and convert	• $\log_5 x = 2$ and $\log_5 y = -1$ $x = 5^2$ and $y = 5^{-1}$				
		• substitute into $y = kx^n$ and evaluate k	• 4 $5^{3} = k(1)^{n} \implies k = 125$				
		• substitute other point into $y = kx^n$ and evaluate n	$ \bullet^5 5^{-1} = 5^3 \times 5^{2n} \Rightarrow 3 + 2n = -1 \Rightarrow n = -2 $				

Notes:

- 1. In any method, marks may only be awarded within a valid strategy using $y = kx^n$.
- 2. Markers must identify the method which best matches the candidates approach; markers must not mix and match between methods.
- 3. Penalise the omission of base 5 at most once in any method.
- 4. In Method 4, candidates may use (2,-1) for \bullet^1 and \bullet^2 and (0,3) for \bullet^3 .
- 5. Do not accept $k = 5^3$.
- 6. In Method 3, do not accept m = -2 or gradient = -2 for \bullet^5 .
- 7. Accept $y = 125x^{-2}$ for •⁵.

Commonly Observed Responses:						