

# LAWS OF LOGS

1. Simplify  $\frac{\log_b 9a^2}{\log_b 3a}$ , where  $a > 0$  and  $b > 0$ .

A. 2

B.  $3a$

C.  $\log_b 3a$

D.  $\log_b(9a^2 - 3a)$

2

[SQA]

2. Evaluate  $\log_5 2 + \log_5 50 - \log_5 4$ .

3

3. (a) Given that  $\log_4 x = P$ , show that  $\log_{16} x = \frac{1}{2}P$ .

3

(b) Solve  $\log_3 x + \log_9 x = 12$ .

3

[SQA]

4. Given  $x = \log_5 3 + \log_5 4$ , find algebraically the value of  $x$ .

4

[SQA]

5. The diagram shows a sketch of part of the graph of  $y = \log_5 x$ .

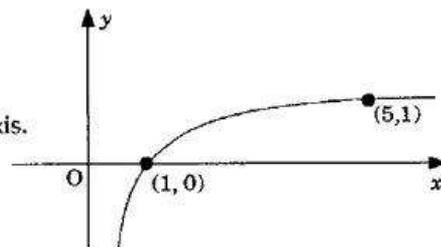
(a) Make a copy of the graph of  $y = \log_5 x$ .

On your copy, sketch the graph of  $y = \log_5 x + 1$ .

Find the coordinates of the point where it crosses the  $x$ -axis.

(b) Make a second copy of the graph of  $y = \log_5 x$ .

On your copy, sketch the graph of  $y = \log_5 \frac{1}{x}$ .



3

2

6. Solve  $\log_b x - \log_b 7 = \log_b 3$  for  $x > 0$ .

A.  $x = 21$

B.  $x = 10$

C.  $x = \frac{7}{3}$

D.  $x = \frac{3}{7}$

2

[SQA]

7. Find  $x$  if  $4 \log_x 6 - 2 \log_x 4 = 1$ .

3

[END OF QUESTIONS]