

# Sheet 1

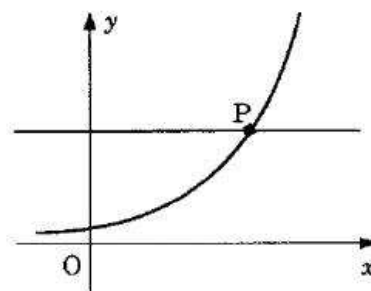
[SQA] 1. Evaluate  $\log_5 2 + \log_5 50 - \log_5 4$ . 3

2. (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] 3. The diagram shows part of the graph with equation  $y = 3^x$  and the straight line with equation  $y = 42$ . These graphs intersect at P.

Solve algebraically the equation  $3^x = 42$ , and hence write down, correct to 3 decimal places, the coordinates of P.



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[SQA] 4. Before a forest fire was brought under control, the spread of the fire was described by a law of the form  $A = A_0 e^{kt}$  where  $A_0$  is the area covered by the fire when it was first detected and  $A$  is the area covered by the fire  $t$  hours later.

If it takes one and a half hours for the area of the forest fire to double, find the value of the constant  $k$ . 3

[END OF QUESTIONS]