№1

Simplify each of the following expressions, giving the final answer as an integer.

a) $\log_2 3 - \log_2 24$.

b) $\log_a a^2 - 4\log_a\left(\frac{1}{a}\right)$, $a > 0$, $a \neq 1$.

Answers:

a)

b)

№2

Given that

$$p = \log_a 4 \quad \text{and} \quad q = \log_a 5,$$

express each of the following logarithms in terms of p and q.

a) $\log_a 100$

b) $\log_a 0.4$

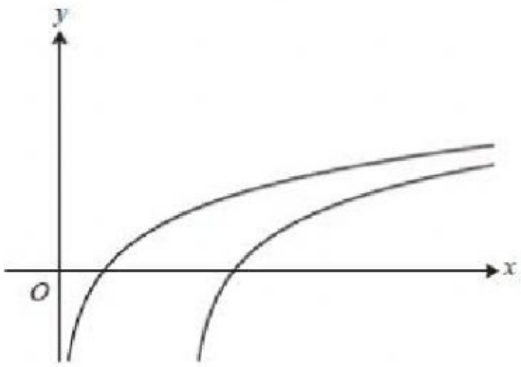
The final answers may not contain any logarithms.

Answers:

a)

b)

№3



The diagram shows the curves $y = \log_2 x$ and $y = \log_2 (x - 3)$.

(i) Describe the geometrical transformation that transforms the curve $y = \log_2 x$ to the curve $y = \log_2 (x - 3)$. [2]

(ii) The curve $y = \log_2 x$ passes through the point $(a, 3)$. State the value of a. [1]

(iii) The curve $y = \log_2 (x - 3)$ passes through the point $(b, 1.8)$. Find the value of b, giving your answer correct to 3 significant figures. [2]

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