

5.3 Properties of Logarithms

Block: _____ Mark Out Of 18 _____

Expand each logarithm.

1) $\log_6 (xy^3)^2$

2) $\ln (10 \cdot 7 \cdot 3^3)$

Condense each expression to a single logarithm.

3) $24\log_5 11 - 6\log_5 3$

4) $\ln a + \ln b + 6\ln c$

Use a calculator to approximate each to the nearest thousandth.

5) $\log_6 37$

6) $\log_7 1$

Find the inverse of each function. 4 marks

7) $y = \log_2(x + 1)$

8) $y = 3^{\frac{x}{5}}$

Use the properties of logarithms and the values below to find the logarithm indicated. Do not use a calculator to evaluate the logs. 4 marks

9) $\log_9 6 \approx 0.8$

$\log_9 11 \approx 1.1$

$\log_9 8 \approx 0.9$

Find $\log_9 \frac{1}{6}$

10) $\log_4 9 \approx 1.6$

$\log_4 7 \approx 1.4$

$\log_4 6 \approx 1.3$

Find $\log_4 \frac{7}{36}$

Use the properties of logarithms and the logarithms provided to rewrite each logarithm in terms of the variables given. 4 marks

11) $\log_4 9 = X$

$\log_4 5 = Y$

$\log_4 6 = Z$

Find $\log_4 324$

12) $\log_5 11 = X$

$\log_5 6 = Y$

$\log_5 8 = Z$

Find $\log_5 \frac{32}{15}$