

## Single Logarithm and Expansion

Sheet 3

Expand each expression :

1)  $\log_e \left( \frac{p^8 q^5}{r} \right) =$  \_\_\_\_\_

2)  $8 \log_4 \left( \frac{y^2}{z^3} \right) =$  \_\_\_\_\_

3)  $\log_8 \left( \frac{6}{h} \right)^2$  \_\_\_\_\_

4)  $\log_6 \left( \frac{l^4}{m^5 n^2} \right)$  \_\_\_\_\_

5)  $\log_3 \sqrt[4]{7c^5}$  \_\_\_\_\_

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Rewrite each expression

6)  $4 (\log_5 8 - \log_5 \dots)$  \_\_\_\_\_

7)  $(20 \log_7 g + 12 \dots)$  \_\_\_\_\_

8)  $7 \log_e x - 3 \log_e y =$  \_\_\_\_\_

9)  $8 \log_3 u - (4 \log_3 v + 10 \log_3 w) =$  \_\_\_\_\_

10)  $\frac{1}{5} (2 \log_2 4 + \log_2 w) =$  \_\_\_\_\_

## Single Logarithm and Expansion

Sheet 3

Expand each expression :

$$1) \log_e \left( \frac{p^8 q^5}{r} \right) = \underline{(8 \log_e p + 5 \log_e q) - \log_e r}$$

$$2) 8 \log_4 \left( \frac{y^2}{z^3} \right) = \underline{16 \log_4 y - 24 \log_4 z}$$

$$3) \log_8 \left( \frac{6}{h} \right)^2 = \underline{2 \log_8 6 - 2 \log_8 h}$$

$$4) \log_6 \left( \frac{l^4}{m^5 n^2} \right) = \underline{4 \log_6 l - 5 \log_6 m - 2 \log_6 n}$$

$$5) \log_3 \sqrt[4]{7c^5} = \underline{\frac{1}{4} \log_3 7 + \frac{5}{4} \log_3 c}$$

Rewrite each expression

$$6) 4 (\log_5 8 - \log_5 2) = \underline{4 \log_5 4}$$

$$7) (20 \log_7 g + 12 \log_7 h^3) = \underline{4 \log_7 (5g^5 h^9)}$$

$$8) 7 \log_e x - 3 \log_e y = \underline{\log_e \left( \frac{x^7}{y^3} \right)}$$

$$9) 8 \log_3 u - (4 \log_3 v + 10 \log_3 w) = \underline{2 \log_3 \left( \frac{u^4}{v^2 w^5} \right)}$$

$$10) \frac{1}{5} (2 \log_2 4 + \log_2 w) = \underline{\log_2 \sqrt[5]{4^2 w}}$$

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