

LAWS OF LOGS WORKSHEET

1. Simplify: $\log_5 5 + \log_3 3^4 + 2^{\log_2 3}$

2. Simplify: $\log_5 125 + \log_4 \sqrt{4}$

3. Solve for x :

a. $\log_3 x = 4$

b. $\log_{\sqrt{3}} 81 = x$

c. $\log_x 64 = -3$

d. $2\log x = \log 4 + \log 9$

e. $3\log x + 2\log x = 25$

f. $\log_4(x+3) + \log_4(x-3) = 2$

g. $\log_{\sqrt{2}} x = \log_{\sqrt{2}} 3 + \log_{\sqrt{2}} 6 - \log_{\sqrt{2}} 2$

h. $\log_8(x+1) - \log_8 x = \log_8 4$

i. $4\log \sqrt[3]{x} + \log \sqrt[3]{x^2} = \log \frac{1}{8}$

j. $\log_5(2x+1) = 1 - \log_5(x+2)$

k. $\log_2[\log_3 x] = 1$

4. Simplify :

a. $(\log_A B)(\log_B C)(\log_C A)$

b. $\log_{\frac{1}{4}} 4$

c. $\log_7(\sqrt{7})^4$

d. $10^{\log M} + \log 10^M$

5. Solve (exact answer and 3 decimal places): $5^{x-1} = 2^{3+x}$

6. Sketch the graphs of the following functions, stating the domain and range:

a. $y = 2^{x+4} + 1$

b. $y = \log_3(x-3) - 5$

7. Sketch the graph: $\log_{(x-2)} y = \log_{(x-2)} x^2$

(represent y as a function of x first, and state restrictions)

8. If $\log_3 x = 3$ and $\log_3 y = 5$, evaluate $\log_3(9x^{-2}y^3)$

9. If $\log_2 x = 4$, evaluate $\log_2(8x^3)$

10. If $\log_2 5 = x$ simplify $\log_2 10\sqrt{5} + \log_2 100$