

Easy Logarithm Problems

1. Given $\log_a 16 = 2$, find (a) a (b) $\log_{16} \left(\frac{1}{a} \right)$.
2. Given $p = \frac{1}{q^4}$, find (a) $\log_q p$ (b) $2\log_p q$
3. If $5^m = 7^n = 35^p$, express p in terms of m and n .
4. Given $\log_x 9 = y$, find $\log_9 81x$ in terms of y .
5. If $5^m = 7^n = 35^p$, express p in terms of both m and n .
6. Given $h = 3^x$ and $k = 3^y$.
 - (a) Express $\frac{27^{x+y}}{9^x}$ in terms of h and k .
 - (b) Express $\log_9 \frac{9h^2}{k}$ in terms of x and y .
7.
 - (a) Simplify $\log_3(4p + 1) - 3\log_9 p^2 + 4\log_3 p$
 - (b) Solve $\log_3(4p + 1) - 3\log_9 p^2 + 4\log_3 p = 1$
8. Show that $a^{\log_c b} = b^{\log_c a}$
9. Given $\log_a b = \log_b c = \log_c a$, show that $a = b = c$.