

1. Find the logarithm of (i) 16 to the base 2 (ii) 1000 to the base 10
2. If $\log_5 a = 3$, find the value of a.
3. Determine the value of x if $\log_2(x^2 - 1) = \log_2 8$.
4. $\log_a(1+2+3) = \log_a 1 + \log_a 2 + \log_a 3$
5. $\log\left(\frac{a^2}{bc}\right) + \log\left(\frac{b^2}{ca}\right) + \log\left(\frac{c^2}{ab}\right) = 0$
6. Prove that $\log_{10}\frac{9}{8} - \log_{10}\frac{27}{32} + \log_{10}\frac{3}{4} = 0$
7. Find (i) $\log(p^3) - \log P$ (ii) $\log(P^3) \div \log P$.
8. Simplify : $\log_8\frac{81}{32} + 3 \log_{10}\frac{5}{3} + \log_{10}\frac{1}{9} + \log_{10} 768$.
9. Simplify: $\log_8 \frac{32^{\frac{2}{5}} \times (4)^{\frac{-1}{2}} \times 8^{\frac{1}{3}}}{2^{-2} + (64)^{\frac{-1}{3}}}$.
10. If $\log_{10}x = a + b$ and $y = 10^{a-b}$, then find the value of $\log_{10}(x^2 y^3)$ in terms of a and b.
11. If $x = (100)^a$, $y = (10000)^b$ and $z = (10)^2$, express $\log_{10}\frac{10\sqrt{y}}{x^2 z^3}$ in terms of a, b, c.
12. If $\log 2 = 0.3010$, $\log 3 = 0.4771$, and $5 = 0.6990$, find $\log 30$.
13. If $\log 7 = 0.8451$ and $\log 3 = 0.4771$, find $\log 21^5$.
14. Without using tables solve:
15. $\log_{10} 5 + \log_{10}(5x + 1) = \log_{10}(x + 5) + 1$.
16. If $x + \log_5^4$, $y = \log_5^3$ and $z = 2 \log_5^{\sqrt{3}}$ find: (i) $x - y + z$ (ii) 4^{x-y+z}

1. Find :
 - i. The logarithm of 1000 to the base 10.
 - ii. The logarithm of $\frac{1}{9}$ to the base 3.
2. Find x, if :
 - i. $\text{Log}_2 x = -2$
 - ii. $\text{Log}_4 (x + 3) = 2$
 - iii. $\text{Log}_x 64 = \frac{3}{2}$
3. Express $\log_{10} \sqrt[5]{108}$ in terms of $\log 10^2$ and $\log 10^3$
4. Express as a single logarithm: $2 + \frac{1}{2} \log 10^9 - 2 \log 10^5$
5. Find x, if :
 - i. $\log_{10} (x + 5) = 1$
 - ii. $\log_{10} (x + 1) + \log_{10} (x - 1) = \log_{10} 11 + 2 \log_{10} 3$
6. if $\log 2 = 0.3010$ and $\log 3 = 0.4771$, find the value of :
 - i. $\log 6$
 - ii. $\log 5$
 - iii. $\log \sqrt{24}$
7. if $\log_{10} 4 = 0.6.2.$; find the value of :
 - i. $\log_{10} 8$
 - ii. $\log_{10} 2.5$
8. given $\log_{10} x = a$ and $\log_{10} y = b$.
 - i. write down 10^{a-1} in terms of x
 - ii. write down 10^{2b} in terms of y.
 - iii. if $\log_{10} P = 2a - b$; express P in terms of x and y.
9. evaluate :
 - i. $\log_{125} 625 - \log_{16} 64$
 - ii. $\log_{16} 32 - \log_{25} 125 + \log_9 27$
10. if $\frac{1}{\log_a x} + \frac{1}{\log_b x} = \frac{2}{\log_c x}$, prove that: $c^2 = ab$