

LOG

1. Evaluate $12^{\frac{1}{3}} \div 81^{\frac{1}{6}} \times 162^{\frac{1}{3}}$ without using a calculator

2. Simplify $\sqrt[6]{a^{x+2}} \div \sqrt[9]{a^{x+3}}$

3. Given that $y = 3^x$, express each of the following in terms of y

a. $2(3^{2-x})$

b. $3^{2x} + 9^{x-1}$

4. Given that $y = 2^{2x}$, find the value of x in each of the following

a. $2^{2x+1} + 4^{x-1} = 18$

b. $8^{\frac{2}{3}x+\frac{1}{3}} + 4^{x+1} = 48$

5. Simplify following questions

a. $\log_4(xy)^3 - \log_4 xy$

b. $\log_3 9x^4 - \log_3(3x)^2$

c. $\log_3 \sqrt{3} + \log_3 \sqrt{27}$

6. Express the following in terms of $\log_{10} a$, $\log_{10} b$ and $\log_{10} c$

a. $\log_{10} \frac{\sqrt{ab}}{c}$

b. $3\log_{10} \frac{a^{\frac{1}{3}}}{\sqrt{b^4c^2}}$

7. Given $\log_3 2 = 0.6309$ and $\log_3 5 = 1.4650$, evaluate each of the following

a. $\log_3 3^{\frac{1}{3}}$

b. $\log_3 0.08$

8. Evaluate 10^x in each of the following

a. $x = \log_{10} 6$

b. $x = \log_{10}(\log_{10} 6)$

9. Given that $3 = 5^x$ and $5 = 3^y$, find the value of xy without using a calculator

10. It is given that $\log_5 x = a$ and $\log_5 y = b$. Express each of the following in terms of a and b

a. xy

b. $\log_5 \sqrt{\frac{x^2}{y}}$

11. Find the value of $(\log_4 17)^2 + \log_4 19$. Round off the answer to four significant figures.

12. Given $x = \log_9 y$, express each of the following in terms of x

a. $\log_9 3y^2$

b. $\log_y 81$

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13. Given $p = \log_{10} 5$ and $q = \log_3 2$, express $\log_3 5$ in terms of p and q

14. Given $\log_a y = x$, express $\log_{\frac{1}{a}} y$ in terms of x

15. Given $\log_4 x = k$, express each of the following in terms of k

a. $\log_8 x$

b. $\log_2 8x^3$

16. Given $\log_9 \sqrt{x} = h$ and $\log_3 \frac{1}{y} = k$, express xy and $\frac{x}{y}$ as powers of 3

17. Solve $3^{4x} = 27^{x+3}$

18. Solve $4^x \times 3^{2x} = 216$

19. Solve $\log_4 0.25 = x + 2$

20. Solve $\log_x (5x - 2) = 1$

21. Solve $6^{x+1} - (3^{x+1})(2^x) = 18(4^x)(3^{2x})$

22. Solve $\log_2 \frac{3x-4}{2x-7} = 3$

23. Solve $(\log_5 x)^2 = 2 \log_5 x$

24. Solve $\log_3 n + \log_9 n = 4\frac{1}{2}$

25. $\log_2 x = 2 + \log_8 x$

26. Solve $5^{x+2} = 12$

27. Solve $6^x = 3^{x+2}$

28. Solve $(4x)^{\log_{10} 5} = (5x)^{\log_{10} 7}$

29. Solve $(\log_{10} 24)(\log_{10} x^2) = 5 \log_{10} 12$

30. Find the values of x . Give the answers correct to three significant figures.

a. $\log_{10} x = 10^{\log_{10} 2}$

b. $5^x = 16 - 63 \times 5^{x-1}$

31. Given $\log_5 y = a \log_5 x + 2 \log_5 b$, express y in terms of x , a and b

32. Solve $3^{x+1} - 30(3^x) + 3 = 0$

33. Solve $\log_5 (10x^2 - 1) - 2 \log_5 x = 1$

34. Given $6 \log_p 6 = 4 + \log_p 576$, find value of p

35. Given $\log_2 y = a + b \log_2 x$, where a and b are constants. If $y=32$ when $x=2$ and $\log_2 y = 9$ when $x=8$, find values of a and b

36. In January of the year 2000, Ivan deposited RM 4000 in a mutual fund which promises an interest rate of 8% compounded yearly. The amount of RM y at the end of n years is $y = 4000(1.08)^{n-1}$, find the amount of money received by Ivan at the end of year 2015.