

[logarithms]

1. If $\log_a P = 3$ and $\log_a Q = 5$ and $\log_a R = 7$ find the value of

a. $\log_a \frac{P^4 R^2}{Q^3}$

b. $\log_a \frac{(P^{-2} Q^2)^{-1}}{R^3}$

2. If $\log_5 4 = a$ and $\log_5 3 = b$ find the value of

a. $\log_5 36$

b. $\log_5 \left(\frac{20}{3}\right)$

3. Find the value of x :

a. $\log(x + 1) + \log(x - 2) = 1$

b. $\log_2 x - \log_2 3 = 2$

c. $\log_a x + 2 \log_a x = \log_a 8$

d. $\log_2(9x + 5) - \log_2(x - 1) = 2$

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

f. $\log_3(5x + 7) - \log_3(x - 1) = \log_3(3x + 2)$

g. $\log_2 5 + \log_2 7 = \log_2 x$

h. $\log_{32} 56 - \log_{32} 7 = x$

4. Simplify:

a. $\log_3 9\sqrt{27}$

b. $\log_5 25 (5)^{\frac{1}{3}}$

c. $\log_{27} 3$

d. $\log_4 8\sqrt{32}$