Log m + Log N
Log m − Log N

(7) $\log_3 54 - \log_3 2$

$\log_3 \frac{54}{2}$

$\log_3 27$

$\log_3 3^3$ (3)

$= 3$

(8) $4\log_2 x + 7\log_2 y$

$\log_2 x^4 + \log_2 y^7$

$\log_2 (x^4 y^7)$

(9) $2\ln x + 3\ln y - 4\ln z$

$\ln x^2 + \ln y^3 - \ln z^4$

$\ln (x^2 y^3) - \ln z^4$

$\ln \frac{x^2 y^3}{z^4}$

(10) $\frac{1}{5}(\log_3 x - 4\log_3 y) + 5\log_3 (x-7)$

$\frac{1}{5}(\log_3 x - \log_3 y^4) + \log_3 (x-7)^5$

$\frac{1}{5}\log_3 \frac{x}{y^4} + \log_3 (x-7)^5$

$\log_3 \left(\frac{x}{y^4}\right)^{\frac{1}{5}} + \log_3 (x-7)^5$

$\log_3 \sqrt[5]{\frac{x}{y^4}} + \log_3 (x-7)^5$

$\log_3 \left[\sqrt[5]{\frac{x}{y^4}} (x-7)^5\right]$

(11) $\ln x + \ln (x^2-9) - \ln 7 - \ln (x+3)$

$\ln [x(x^2-9)] - \ln 7 - \ln (x+3)$

$\ln \frac{x(x^2-9)}{7} - \ln (x+3)$

DIVIDE

$\ln \frac{x(x^2-9)}{7(x+3)}$

$\ln \frac{x(x+3)(x-3)}{7(x+3)}$

$\ln \frac{x(x-3)}{7}$

(12) $\log_5 13$

CHANGE OF BASE FORMULA

$\frac{\log 13}{\log 5}$ or $\frac{\ln 13}{\ln 5}$

1.5937

(13) $y = \log_5 (x+3)$

$= \frac{\log (x+3)}{\log 5}$