Ejercicio 1

Cnociendo los logaritmos de 2, 3 ,5 y 7 .Calcula:

(a) $\log 105$

$$\begin{aligned}\log 105 &= \log(7 \cdot 5 \cdot 3) \\ &= \log 7 + \log 3 + \log 5.\end{aligned}$$

(b) $\log 108$

$$\begin{aligned}\log 108 &= \log(3^3 \cdot 2^2 2) \\ &= 3\log 2 + 2\log 2.\end{aligned}$$

(c) $\log \sqrt[3]{72}$

$$\begin{aligned}\log \sqrt[3]{72} &= \frac{1}{3}\log(3^2 \cdot 2^3) \\ &= \frac{1}{3}(2\log 3 + 3\log 2) \\ &= \frac{2}{3}\log 3 + \log 2.\end{aligned}$$

(d) $\log 2.4$

$$\begin{aligned}\log 2.4 &= \log \frac{12}{5} \\ &= \log 12 - \log 5 \\ &= \log(2^2 \cdot 3) - \log 5 \\ &= 3\log 2 + \log 3 - \log 5\end{aligned}$$

.

Ejercicio 2

Expresar las siguientes relaciones por un solo logaritmo.

(e) $\log 2 - \log 3 + \log 5$

$$\begin{aligned}\log 2 - \log 3 + \log 5 &= \log 2 - \log 15 \\ &= \log \frac{2}{15}.\end{aligned}$$

(f) $3\log 2 - 4\log 3$

$$\begin{aligned}3\log 2 - 4\log 3 &= \log(2^3) - \log(3^4) \\ &= \log\left(\frac{2^3}{3^4}\right).\end{aligned}$$

(f) $\log 5 - 1$

$$\begin{aligned}\log 5 - 1 &= \log 5 - \log 10 \\ &= \log\left(\frac{5}{10}\right) \\ &= \log\left(\frac{1}{2}\right) \\ &= -\log 2.\end{aligned}$$

(h) $\frac{1}{3}\log 25 - \frac{1}{3}\log 64 + \frac{2}{3}\log 27$

$$\begin{aligned}\frac{1}{3}\log 25 - \frac{1}{3}\log 64 + \frac{2}{3}\log 27 &= \log \sqrt[3]{25} - \log \sqrt[3]{64} + \log \sqrt[3]{27^2} \\ &= \frac{\log \sqrt[3]{25} \cdot \log \sqrt[3]{27^2}}{\sqrt[3]{64}}\end{aligned}$$

(i) $2\log 3 + 4\log_2 -3$