LOGARITMOS

Sabiendo que log 2= 0,301030, y log 3= 0,477121

Calcular:

$$x = \frac{\frac{\log 75}{\log 5} + 2}{3}$$

Solución Problema 51:

$$x = \frac{\frac{\log 75}{\log 5} + 2}{3} = \frac{\frac{\log 75 + 2\log 5}{\log 5}}{3} = \frac{\log 75 + 2\log 5}{3 \cdot \log 5}$$

Descomponemos 75 en factores primos:

$$75 = 3 \cdot 5 \cdot 5 \cdot 1 = 3 \cdot 5^2$$

Luego:

$$x = \frac{\log 75 + 2\log 5}{3 \cdot \log 5} = \frac{\log(3 \cdot 5^2) + 2\log 5}{3 \cdot \log 5} = \frac{\log 3 + \log 5^2 + 2\log 5}{3 \cdot \log 5} =$$

$$= \frac{\log 3 + 2\log 5 + 2\log 5}{3 \cdot \log 5} = \frac{\log 3 + 4\log 5}{3 \cdot \log 5} = \frac{\log 3 + 4\log\frac{10}{2}}{3 \cdot \log\frac{10}{2}} =$$

$$= \frac{\log 3 + 4(\log 10 - \log 2)}{3 \cdot (\log 10 - \log 2)} = \frac{\log 3 + 4\log 10 - 4\log 2}{3\log 10 - 3\log 2} =$$

$$= \frac{0,477121 + 4 \cdot 1 - 4 \cdot 0,301030}{3 \cdot 1 - 3 \cdot 0,301030} = \frac{4,477121 - 1,20412}{3 - 0,903090} =$$

$$= \frac{3,273001}{2,09691} = 1,560868$$