4. Conocidos $\ln a = 0'6$ y $\ln b = 2'4$ calcular:

a) $\ln\sqrt{a}$ **b)** $\ln\sqrt[4]{b}$ **c)** $\ln\sqrt{ab}$ **d)** $\ln\sqrt[3]{\frac{ab}{e^2}}$ **e)** $\ln\frac{\sqrt{a^{-3}}}{\sqrt[3]{b^2}}$

Solución

a) $\ln\sqrt{a} = \ln a^{1/2} = \frac{1}{2}\ln a = \frac{1}{2}.0'6 = 0'3$

b) $\ln\sqrt[4]{b} = \ln b^{1/4} = \frac{1}{4}\ln b = \frac{1}{4}.2'4 = 0'6$

c) $\ln\sqrt{ab} = \ln(ab)^{1/2} = \frac{1}{2}\ln(ab) = \frac{1}{2}(\ln a + \ln b) = \frac{1}{2}(0'6 + 2'4) = \frac{1}{2}3 = 1'5$

d) $\ln\sqrt[3]{\frac{ab}{e^2}} = \ln\left(\frac{ab}{e^2}\right)^{1/3} = \frac{1}{3}\ln\frac{ab}{e^2} = \frac{1}{3}(\ln(ab) - \ln e^2) = \frac{1}{3}(\ln a + \ln b - 2) = \frac{1}{3}(0'6 + 2'4 - 2) = \frac{1}{3}$

e) $\ln\frac{\sqrt{a^{-3}}}{\sqrt[3]{b^2}} = \ln\sqrt{a^{-3}} - \ln\sqrt[3]{b^2} = \ln a^{-3/2} - \ln b^{2/3} = \frac{-3}{2}\ln a - \frac{2}{3}\ln b = \frac{-3}{2}0'6 - \frac{2}{3}2'4 = -2'5$