

CORRECTION

EXERCICE n°27 :

On a $h(x) = (x-4)\ln(4-x) - x\ln x$ sur $]0;4[$.

Alors :

$$h'(x) = 1 \times \ln(4-x) + (x-4) \times \frac{-1}{4-x} - \left(1 \times \ln x + x \times \frac{1}{x} \right) = \ln(4-x) - \ln x = \ln\left(\frac{4-x}{x}\right).$$

On a :

$$\int_1^2 \ln\left(\frac{4-x}{x}\right) dx = \int_1^2 h'(x) dx = [h(x)]_1^2 = 3\ln 3 - 4\ln 2.$$