

CORRECTION

EXERCICE n°28 :

On a $f(x) = \ln(4 + e^{-x})$ sur \mathbb{R} .

Alors :

$$f'(x) = \frac{-e^{-x}}{4 + e^{-x}} = \frac{-e^{-x} \times e^x}{(4 + e^{-x}) \times e^x} = -\frac{1}{4e^x + 1}.$$

On a :

$$\int_0^{\ln 2} \frac{8}{4e^x + 1} dx = -8 \int_0^{\ln 2} -\frac{1}{4e^x + 1} dx = -8 \int_0^{\ln 2} f'(x) dx = -8[f(x)]_0^{\ln 2} = 8 \ln\left(\frac{10}{9}\right).$$