

Exercice 3.1.

a) voir solutions page 75 du polycopié

b) voir solutions page 75 du polycopié

$$\begin{aligned} \text{c) } \int_1^2 \frac{1}{x+1} dx &= \int_1^2 \frac{(x+1)'}{x+1} dx = [\ln(|x+1|)]_1^2 = \\ &= [\ln|3| - \ln|2|] = [\ln(3) - \ln(2)] = \boxed{\ln\left(\frac{3}{2}\right)} \cong 0,405 \end{aligned}$$

$$\begin{aligned} \text{d) } \int_0^1 \frac{3x+1}{3x^2+2x+1} dx &= \frac{1}{2} \int_0^1 \frac{6x+2}{3x^2+2x+1} dx = \frac{1}{2} \int_0^1 \frac{(3x^2+2x+1)'}{3x^2+2x+1} dx = \\ &= \frac{1}{2} [\ln(|3x^2+2x+1|)]_0^1 = \frac{1}{2} [\ln|6| - \ln|1|] = \frac{1}{2} [\ln(6) - \ln(1)] = \boxed{\frac{1}{2} \ln(6)} \cong 0,896 \end{aligned}$$

ou par changement de variable :

$$u = 3x^2 + 2x + 1$$

$$du = (6x + 2) dx$$

etc ...