

Evaluate the following expressions

[1] Evaluate

$$\sin \frac{\pi}{4} + \cos \frac{\pi}{4}$$

[2] Evaluate

$$\ln e^2 - \ln 2 + \ln 2e^3$$

[3] Evaluate

$$e^{2 \ln 3}$$

[4] Differentiate

$$\ln(x + 1)$$

[4] Find the antiderivative (indefinite integral):

$$\int \frac{1}{e^x} dx$$