

$$\begin{aligned}
& \text{> } f := \ln(1 + x) \\
& \qquad \qquad \qquad f := \ln(1 + x) \tag{1} \\
& \text{> } \text{taylor}(f, x = 0) \\
& \qquad \qquad \qquad x - \frac{1}{2} x^2 + \frac{1}{3} x^3 - \frac{1}{4} x^4 + \frac{1}{5} x^5 + O(x^6) \tag{2} \\
& \text{> } \text{aprox} := \text{taylor}(f, x = 0, 8) \\
& \qquad \qquad \text{aprox} := x - \frac{1}{2} x^2 + \frac{1}{3} x^3 - \frac{1}{4} x^4 + \frac{1}{5} x^5 - \frac{1}{6} x^6 + \frac{1}{7} x^7 + O(x^8) \tag{3} \\
& \text{> } \text{aprox} := \text{convert}(\text{aprox}, \text{polynom}) \\
& \qquad \qquad \text{aprox} := x - \frac{1}{2} x^2 + \frac{1}{3} x^3 - \frac{1}{4} x^4 + \frac{1}{5} x^5 - \frac{1}{6} x^6 + \frac{1}{7} x^7 \tag{4} \\
& \text{> } a := \text{subs}(x = 1.0, \text{aprox}) \\
& \qquad \qquad \qquad a := 0.7595238095 \tag{5} \\
& \text{> } \text{evalf}(\ln(2.0) - a) \\
& \qquad \qquad \qquad -0.0663766289 \tag{6} \\
& \text{> "ca sa obtinem } \ln(2) \text{ cu 5 zecimale trebuie ca Restul din formula lui Taylor } \leq 10^{(-5)}. \text{ } n \geq 10 \\
& \qquad \qquad \qquad \text{^5-1}" \\
& \text{"ca sa obtinem } \ln(2) \text{ cu 5 zecimale trebuie ca Restul din formula lui Taylor } \leq 10^{(-5)}. \text{ } n \geq 10^5-1" \tag{7} \\
& \text{> } g := \ln\left(\frac{1+x}{1-x}\right) \\
& \qquad \qquad \qquad g := \ln\left(\frac{1+x}{1-x}\right) \tag{8} \\
& \text{> } \text{taylor}(g, x = 0) \\
& \qquad \qquad \qquad 2x + \frac{2}{3} x^3 + \frac{2}{5} x^5 + O(x^7) \tag{9} \\
& \text{> } \text{aprox} := \text{taylor}(g, x = 0, 16) \\
& \qquad \qquad \text{aprox} := 2x + \frac{2}{3} x^3 + \frac{2}{5} x^5 + \frac{2}{7} x^7 + \frac{2}{9} x^9 + \frac{2}{11} x^{11} + \frac{2}{13} x^{13} + \frac{2}{15} x^{15} + O(x^{17}) \tag{10} \\
& \text{> } \text{aprox} := \text{convert}(\text{aprox}, \text{polynom}) \\
& \qquad \qquad \text{aprox} := 2x + \frac{2}{3} x^3 + \frac{2}{5} x^5 + \frac{2}{7} x^7 + \frac{2}{9} x^9 + \frac{2}{11} x^{11} + \frac{2}{13} x^{13} + \frac{2}{15} x^{15} \tag{11} \\
& \text{> } \text{solve}\left(\frac{1+x}{1-x} = 2\right) \\
& \qquad \qquad \qquad \frac{1}{3} \tag{12} \\
& \text{> "aproximare pt } \ln(2)"; a := \text{subs}\left(x = \frac{1}{3}, \text{aprox}\right); \text{evalf}(\ln(2) - a) \\
& \qquad \qquad \text{"aproximare pt } \ln(2)"} \\
& \qquad \qquad a := \frac{149337754816}{215448838605} \\
& \qquad \qquad \qquad 1.1 \cdot 10^{-9} \tag{13} \\
& \text{>} \\
& \text{>}
\end{aligned}$$

