

Quiz 12 DEC 11, 2009

$$\begin{aligned} \textcircled{\#1} \int_1^3 \frac{x^3+1}{x} dx &= \int_1^3 (x^2 + \frac{1}{x}) dx \\ &= \left. \frac{x^3}{3} + \ln|x| \right|_1^3 \\ &= \frac{27}{3} + \ln 3 - \left(\frac{1}{3} + \ln 1 \right) \\ &= \boxed{\frac{26}{3} + \ln 3} \end{aligned}$$

$$\begin{aligned} \textcircled{\#2} \int \frac{dx}{x \ln x} & \quad u = \ln x \\ & \quad du = \frac{dx}{x} \\ & \quad \parallel \\ \int \frac{du}{u} &= \ln|u| + C \\ &= \boxed{\ln|\ln x| + C} \end{aligned}$$