Answer on Question# 54548– Mathematics – Integral Calculus

Question:

Integral of log x value is …

Answer:

Let`s use the following notation: $log(x) \equiv ln(x)$. Hence, we have

$$\int lnx\, dx = \left\{the\ integration\ by\ parts\ formula\colon\ \int U(x)V'(x)dx = U(x)V(x) - \int V(x)U'(x)dx\right\}$$
$$= \left\{U(x) = \ln(x), U'(x) = \frac{1}{x};\ V'(x) = 1, V(x) = x\right\} = xln(x) - \int x \cdot \frac{dx}{x}$$
$$= xln(x) - \int dx = xln(x) - x + Const = x(\ln(x) - 1) + Const.$$