

Answer on Question #59387 – Math – Calculus

Question

Integrate with respect to x :

$$\int_1^0 x dx.$$

Solution

Function $\frac{x^2}{2}$ is an antiderivative of x , because $\left(\frac{x^2}{2}\right)' = \frac{1}{2}(x^2)' = \frac{1}{2} \cdot 2x = x$.

By the first fundamental theorem of calculus,

$$\int_1^0 x dx = \frac{x^2}{2} \Big|_1^0 = \frac{0^2}{2} - \frac{1^2}{2} = -\frac{1}{2}.$$

Answer: $\int_1^0 x dx = -\frac{1}{2}.$