

## Answer on Question #53155 – Math – Integral Calculus

Evaluate the following integral:  $\int \frac{1}{(1-x)^3} dx$

### Solution

Let's compute the integral:

$$\begin{aligned}\int \frac{1}{(1-x)^3} dx &= -\int \frac{-dx}{(1-x)^3} = -\int \frac{d(-x)}{(1-x)^3} = -\int \frac{d(1-x)}{(1-x)^3} = -\int (1-x)^{-3} d(1-x) \\ &= -\int t^{-3} dt = -\frac{t^{-2}}{-2} + C = \\ &= -\frac{(1-x)^{-2}}{-2} + C = \frac{1}{2(1-x)^2} + C,\end{aligned}$$

where  $C$  is an arbitrary real constant.

**Answer:**  $\int \frac{1}{(1-x)^3} dx = \frac{1}{2(1-x)^2} + C.$