http://www.mbstudent.com/maths-examples.html

Indefinite integral example

Calculate indefinite integral of function below

$$\int \frac{1}{x^2+8} \cdot dx$$

$$\int \frac{1}{\frac{1}{8} \cdot (8 \cdot x^2+1)} \cdot dx$$

$$8 \cdot \int \frac{1}{(8 \cdot x^2+1)} \cdot dx$$

$$8 \cdot \int \frac{1}{\left(\sqrt{8} \cdot x\right)^2+1} \cdot dx = \left\{ \begin{array}{c} \sqrt{8} \cdot x = t \\ \sqrt{8} \cdot dx = dt \\ dx = \frac{dt}{\sqrt{8}} \end{array} \right\}$$

$$8 \cdot \int \frac{1}{t^2+1} \cdot \frac{dt}{\sqrt{8}}$$

$$\frac{8}{\sqrt{8}} \cdot \int \frac{1}{t^2+1} \cdot dt$$

$$\frac{8}{\sqrt{8}} \cdot \arctan t + C$$

$$\frac{8}{\sqrt{8}} \cdot \arctan\left(\sqrt{8} \cdot x\right) + C$$