

Primitive delle funzioni elementari e di alcune altre funzioni

$$\begin{array}{ll}
 \int x^a dx = \frac{x^{a+1}}{a+1} + C & (a \in \mathbb{R}, a \neq -1) \\
 \int \frac{1}{x} dx = \log|x| + C & \\
 \int e^x dx = e^x + C & \\
 \int \log x dx = x \log x - x + C & \\
 \int \sin x dx = -\cos x + C & \\
 \int \cos x dx = \sin x + C & \\
 \int \tan x dx = -\log|\cos x| + C &
 \end{array}
 \quad
 \begin{array}{l}
 \int \sinh x dx = \cosh x + C \\
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 \int \tanh x dx = \log(\cosh x) + C \\
 \int \frac{1}{x^2+1} dx = \arctan x + C \\
 \int \frac{1}{\sqrt{1-x^2}} dx = \arcsin x + C \\
 \int \frac{1}{\sqrt{x^2+1}} dx = \log(x + \sqrt{x^2+1}) + C \\
 \int \frac{1}{\sqrt{x^2-1}} dx = \log|x + \sqrt{x^2-1}| + C
 \end{array}$$

Dati $a, b, c \in \mathbb{R}$, con $a \neq 0$, si ha (ponendo $\Delta = b^2 - 4ac$)

$$\begin{aligned}
 \int \frac{1}{ax^2 + bx + c} dx &= \frac{2}{\sqrt{-\Delta}} \arctan \left(\frac{2ax + b}{\sqrt{-\Delta}} \right) + C && \text{se } \Delta < 0 \\
 \int \frac{1}{\sqrt{ax^2 + bx + c}} dx &= \frac{1}{\sqrt{|a|}} \log \left| 2ax + b + \sqrt{4a(ax^2 + bx + c)} \right| + C && \text{se } a > 0 \text{ e } \Delta \neq 0 \\
 \int \frac{1}{\sqrt{ax^2 + bx + c}} dx &= -\frac{1}{\sqrt{|a|}} \arcsin \left(\frac{2ax + b}{\sqrt{\Delta}} \right) + C && \text{se } a < 0 \text{ e } \Delta > 0
 \end{aligned}$$