ICE– Institutos de Ciências Exatas
DEMAT – Departamento de Matemática

CÁLCULO 1 – SEMANA 9 - INTEGRAIS

Componente Curricular:
IC241 - CÁLCULO I (90h) - Turma: 02 (2020.1)
IC241 - CÁLCULO I (90h) - Turma: 07 (2020.1)
Prof. Roseli Alves de Moura

TABELA DE INTEGRAIS

Tabela de Integrais
$$\int dx = \int 1\,dx = x + C$$
$$\int x^n\,dx = \frac{x^{n+1}}{n+1} + C$$ $$, \text{sendo } n \in \mathbb{R} \text{ e } n \neq -1$$
$$\int a^x\,dx = \frac{a^x}{\ln a} + C$$
$$\int e^x\,dx = e^x + C$$
$$\int \frac{1}{x}\,dx = \ln\lvert x\rvert + C$$

$\int \text{senx}\, dx = -\text{cosx} + C$
$\int \text{cosx}\, dx = \text{senx} + C$
$\int \sec^2(x)\, dx = \text{tgx} + C$
$\int \text{tgx}\, dx = \ln\lvert\text{secx}\rvert + C$
$\int \text{cotgx}\, dx = \ln\lvert\text{senx}\rvert + C$
$\int \text{secx}\, dx = \ln\lvert\text{secx} + \text{tgx}\rvert + C$
$\int \text{cosecx}\, dx = \ln\lvert\text{cosecx} - \text{cotgx}\rvert + C$
$\int \text{cosec}^2(x)\, dx = -\text{cotgx} + C$
$\int \text{secx.}\, \text{tgx}\, dx = \text{secx} + C$
$\int \text{cosecx.}\, \text{cotgx}\, dx = -\text{cosecx} + C$
$\int \frac{1}{\sqrt{a^2 - x^2}} dx = \text{arcsen}\left(\frac{x}{a}\right) + C$

,com $a \in \mathbb{R}$ e $-a < x < a$
$$\int \frac{1}{a^2 + x^2} dx = \frac{1}{a} \operatorname{arctg}\left(\frac{x}{a}\right) + C$$, com $a \in \mathbb{R}$
$$\int \frac{1}{x.\sqrt{x^2 - a^2}} dx = \frac{1}{a}.\operatorname{arcsec}\left(\frac{x}{a}\right) + C$$, com $a \in \mathbb{R}$ e $x < -a$ ou $x > a$
$$\int \frac{1}{x^2 - a^2} dx = \frac{1}{2a}.\ln\left\lvert\frac{x - a}{x + a}\right\rvert + C$$, com $x \neq \pm a$
$$\int \frac{1}{\sqrt{x^2 + a^2}} dx = \ln\left\lvert x + \sqrt{x^2 + a^2}\right\rvert + C$$, com $a \in \mathbb{R}$
$$\int \frac{1}{\sqrt{x^2 - a^2}} dx = \ln\left\lvert x + \sqrt{x^2 - a^2}\right\rvert + C$$, com $a \in \mathbb{R}$ e $x < -a$ ou $x > a$
$$\int \sqrt{x^2 + a^2}\, dx = \frac{x}{2}.\sqrt{x^2 + a^2} + \frac{a^2}{2}\ln\left\lvert x + \sqrt{x^2 + a^2}\right\rvert + C$$, com $a \in \mathbb{R}$
$$\int \sqrt{x^2 - a^2}\, dx = \frac{x}{2}.\sqrt{x^2 - a^2} - \frac{a^2}{2}\ln\left\lvert x + \sqrt{x^2 - a^2}\right\rvert + C$$,com $a \in \mathbb{R}$ e $x < -a$ ou $x > a$

$$\int \sqrt{a^2 - x^2}\, dx = \frac{x}{2}.\sqrt{a^2 - x^2} + \frac{a^2}{2}.\operatorname{arcsen}\left(\frac{x}{a}\right) + C$$

, com $a \in \mathbb{R}$ e $-a < x < a$