

Disciplina: LT34A – Métodos de Matemática Aplicada

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Fórmulas de Integração:

01) $\int df(x) = \int f'(x)dx = f(x) + C.$

02) $\int adu = a \int du.$

03) $\int (du \pm dv \pm \dots) = \int du \pm \int dv \pm \dots.$

04) $\int u^n du = \frac{u^{n+1}}{n+1} + C. \quad (n \neq -1)$

05) $\int \frac{du}{u} = \ln u + C.$

06) $\int e^{a \cdot u} du = \frac{e^{a \cdot u}}{a} + C.$

07) $\int a^u du = \frac{a^u}{\ln a} + C.$

08) $\int \text{sen}(n \cdot u) du = -\frac{\cos(n \cdot u)}{n} + C.$

09) $\int \cos(n \cdot u) du = \frac{\text{sen}(n \cdot u)}{n} + C.$

10) $\int (a + bu)^n du = \frac{(a + bu)^{n+1}}{b(n+1)} + C. \quad (n \neq -1)$

11) $\int \frac{du}{a + bu} = \frac{1}{b} \ln(a + bu) + C.$

12) $\int \sec^2(x) dx = \text{tg}(x) + C$

13) $\int \sec(x) \cdot \text{tg}(x) \cdot dx = \sec(x) + C$

14) $\int \sec(x) dx = \ln |\sec(x) + \text{tg}(x)| + C$

15) $\int \text{tg}(x) dx = -\ln |\cos(x)| + C$

16) $\int \frac{1}{1+x^2} dx = \text{arctg}(x) + C$

17) $\int \frac{1}{\sqrt{1-x^2}} dx = \text{arcsen}(x) + C$

Partes:

$$\int u \cdot dv = u \cdot v - \int v \cdot du$$

V(média):

$$V_{\text{Méd.}} = \frac{1}{P} \cdot \int_0^P f(t) \cdot dt$$

V(eficaz):

$$V_{\text{ef.}}^2 = \frac{1}{P} \cdot \int_0^P f(t)^2 \cdot dt$$

Euler:

$$e^{j\theta} = \cos(\theta) + j\text{sen}(\theta)$$

$$\cos(\theta) = \frac{1}{2}(e^{j\theta} + e^{-j\theta})$$

$$\text{sen}(\theta) = \frac{1}{2j}(e^{j\theta} - e^{-j\theta})$$

Série de Fourier:

$$f(t) = \frac{a_0}{2} + \sum_{n=1}^{\infty} \{a_n \cdot \cos(nt) + b_n \cdot \text{sen}(nt)\}$$

$$\frac{a_0}{2} = \frac{1}{P} \int_0^P f(t) dt$$

$$a_n = \frac{1}{L} \int_{-L}^L f(t) \cdot \cos\left(\frac{n\pi t}{L}\right) dt$$

$$b_n = \frac{1}{L} \int_{-L}^L f(t) \cdot \text{sen}\left(\frac{n\pi t}{L}\right) dt$$

$$L = \frac{P}{2}$$