Tabelas de Fórmulas do Cálculo

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Fórmulas básicas de diferenciação

1 $D_x u^n = nu^{n-1} D_x u$
2 $D_x(u+v) = D_x u + D_x v$
3 $D_x(uv) = uD_x v + vD_x u$
4 $D_x(\frac{u}{v}) = \frac{vD_x u - uD_x v}{v^2}$
5 $D_x \operatorname{sen} u = \cos u D_x u$
6 $D_x \cos u = -\operatorname{sen} u D_x u$
7 $D_x \tan u = \sec^2 u D_x u$
8 $D_x \cot u = -\csc^2 u D_x u$
9 $D_x \sec u = \sec u \tan u D_x u$
10 $D_x \csc u = -\csc u \cot u D_x u$
11 $D_x \operatorname{sen}^{-1} u = \frac{D_x u}{\sqrt{1-u^2}}$
12 $D_x \cos^{-1} u = \frac{-D_x u}{\sqrt{1-u^2}}$
13 $D_x \tan^{-1} u = \frac{D_x u}{1+u^2}$
14 $D_x \cot^{-1} u = \frac{-D_x u}{1+u^2}$
15 $D_x \sec^{-1} u = \frac{D_x u}{|u|\sqrt{u^2-1}}$
16 $D_x \csc^{-1} u = \frac{-D_x u}{|u|\sqrt{u^2-1}}$
17 $D_x \int_a^u f(t)dt = f(u)D_x u$
18 $D_x \ln u = \frac{D_x u}{u}$
19 $D_x e^u = e^u D_x u$
20 $D_x a^u = a^u \ln a D_x u$
21 $D_x \log_a u = \frac{D_x u}{u \ln a}$
22 $D_x \operatorname{senh} u = \cosh u D_x u$
23 $D_x \cosh u = \operatorname{senh} u D_x u$
24 $D_x \tanh u = \operatorname{sech}^2 u D_x u$
25 $D_x \coth u = -\operatorname{csch}^2 u D_x u$
26 $D_x \operatorname{sech} u = -\operatorname{sech} u \tanh u D_x u$
27 $D_x \operatorname{csch} u = -\operatorname{csch} u \coth u D_x u$

Fórmulas básicas de integração

1 $\int u^n\,du = \frac{u^{n+1}}{n+1} + C \quad (n \neq -1)$
2 $\int \frac{du}{u} = \ln|u| + C$
3 $\int \operatorname{sen} u\,du = -\cos u + C$
4 $\int \cos u\,du = \operatorname{sen} u + C$
5 $\int \sec^2 u\,du = \tan u + C$
6 $\int \csc^2 u\,du = -\cot u + C$
7 $\int \sec u \tan u\,du = \sec u + C$
8 $\int \csc u \cot u\,du = -\csc u + C$
9 $\int \tan u\,du = -ln|\cos u| + C$
10 $\int \cot u\,du = \ln|\operatorname{sen} u| + C$
11 $\int \sec u\,du = \ln|\sec u + \tan u| + C$
12 $\int \csc u\,du = \ln|\csc u - \cot u| + C$
13 $\int \operatorname{sen}^2 u\,du = \frac{1}{2}u - \frac{1}{4}\operatorname{sen} 2u + C$
14 $\int \cos^2 u\,du = \frac{1}{2}u + \frac{1}{4}\operatorname{sen} 2u + C$
15 $\int \frac{du}{\sqrt{a^2-u^2}} = \operatorname{sen}^{-1}\frac{u}{a} + C$
16 $\int \frac{du}{a^2+u^2} = \frac{1}{a}\tan^{-1}\frac{u}{a} + C$
17 $\int \frac{du}{u\sqrt{u^2-a^2}} = \frac{1}{a}\sec^{-1}|\frac{u}{a}| + C$
18 $\int \operatorname{senh} u\,du = \cosh u + C$
19 $\int \cosh u\,du = \operatorname{senh} u + C$
20 $\int \operatorname{sech}^2 u\,du = \tanh u + C$
21 $\int \operatorname{csch}^2 u\,du = -\coth u + C$
22 $\int \operatorname{sech} u \tanh u\,du = -\operatorname{sech} u + C$
23 $\int \operatorname{csch} u \coth u\,du = -\operatorname{csch} u + C$
24 $\int u dv = uv - \int v\,du + C$
25 $\int e^u = e^u + C$
26 $\int a^u\,du = \frac{a^u}{\ln a} + C$

Trigonometria

Identidades fundamentais
1 $\tan t = \operatorname{sen} t / \cos t$
2 $\cot t = \cos t / \operatorname{sen} t$
3 $\csc t = 1/\operatorname{sen} t$
4 $\sec t = 1/\cos t$
5 $\operatorname{sen}^2 t + \cos^2 t = 1$
6 $1 + \tan^2 t = \sec^2 t$
7 $1 + \cot^2 t = \csc^2 t$

Fórmulas envolvendo o produto de funções
1 $\operatorname{sen} a \cos b = \frac{1}{2}[\operatorname{sen}(a+b) + \operatorname{sen}(a-b)]$
2 $\cos a \cos b = \frac{1}{2}[\cos(a+b) + \cos(a-b)]$
3 $\operatorname{sen} a \operatorname{sen} b = \frac{1}{2}[\cos(a-b) - \cos(a+b)]$

Fórmulas para o dobro do ângulo
1 $\operatorname{sen} 2t = 2\operatorname{sen} t \cos t$
2 $\cos 2t = 2\cos^2 t - 1 = 1 - 2\operatorname{sen}^2 t = \cos^2 t - \operatorname{sen}^2 t$
3 $\cos^2 t = \frac{1}{2}(1 + \cos 2t)$
4 $\operatorname{sen}^2 t = \frac{1}{2}(1 - \cos 2t)$

Soma ou diferença de ângulos
1 $\operatorname{sen}(a \pm b) = \operatorname{sen} a \cos b \pm \cos a \operatorname{sen} b$
2 $\cos(a \pm b) = \cos a \cos b \mp \operatorname{sen} a \operatorname{sen} b$
3 $\tan(a \pm b) = \frac{\tan a \pm \tan b}{1 \mp \tan a \tan b}$
4 $\cot(a \pm b) = \frac{\cot a \cot b \mp 1}{\cot b \mp \cot a}$

Transformadas de Laplace

1	$\mathcal{L}\{f(t)\} = F(s) = \int_0^\infty e^{-st} f(t)\,dt$	10	$\mathcal{L}\{t^n e^{at}\} = \dfrac{n!}{(s-a)^{n+1}}$ $(n = \text{int. posit.})$
2	$\mathcal{L}\{k\} = k/s$ $(k = \text{constante})$	11	$\mathcal{L}\{(-t)^n f(t)\} = F^{(n)}(s)$
3	$\mathcal{L}\{t^n\} = \dfrac{n!}{s^{n+1}}$ $(n = \text{inteiro positivo})$	12	$\mathcal{L}\{e^{kt} f(t)\} = F(s-k)$
4	$\mathcal{L}\{t^p\} = \dfrac{\Gamma(p+1)}{s^{p+1}}$ $(p > -1, s > 0)$	13	$\mathcal{L}\{\int_0^t f(u)\,du\} = \frac{1}{s}\mathcal{L}\{f(t)\}$
5	$\mathcal{L}\{e^{at}\} = \dfrac{1}{(s-a)}$ $(s > a)$	14	$\mathcal{L}\{\int_0^t f(t-\tau)g(\tau)\,d\tau\} = F(s)G(s)$
6	$\mathcal{L}\{\operatorname{sen} at\} = \dfrac{a}{s^2 + a^2}$ $(s > 0)$	15	$\mathcal{L}\{u(t-a)\} = \dfrac{e^{-as}}{s}$
7	$\mathcal{L}\{\cos at\} = \dfrac{s}{s^2 + a^2}$ $(s > 0)$	16	$\mathcal{L}\{u(t-a)f(t-a)\} = e^{-as}F(s)$
8	$\mathcal{L}\{\operatorname{senh} at\} = \dfrac{a}{s^2 - a^2}$ $(s > \lvert a\rvert)$	17	$\mathcal{L}\{\delta(t-a)\} = e^{-as}$
9	$\mathcal{L}\{\cosh at\} = \dfrac{s}{s^2 - a^2}$ $(s > \lvert a\rvert)$	18	$\mathcal{L}\{f'(t)\} = s\mathcal{L}(f) - f(0)$
		19	$\mathcal{L}\{f''(t)\} = s^2\mathcal{L}(f) - sf(0) - f'(0)$
		20	$\mathcal{L}\{f^{(n)}(t)\} = s^n\mathcal{L}(f) - s^{n-1}f(0) - s^{n-2}f'(0) - \ldots - f^{(n-1)}(0)$

Alfabeto grego

A	α	Alpha	N	ν	Nu
B	β	Beta	Ξ	ξ	Xi
Γ	γ	Gamma	O	o	Omicron
Δ	δ	Delta	Π	π	Pi
E	ε, ϵ	Epsilon	P	ρ, ϱ	Rho
Z	ζ	Zeta	Σ	σ	Sigma
H	η	Eta	T	τ	Tau
Θ	θ, ϑ	Theta	Υ	υ	Upsilon
I	ι	Iota	Φ	ϕ, φ	Phi
K	κ	Kappa	X	χ	Chi
Λ	λ	Lambda	Ψ	ψ	Psi
M	μ	Mu	Ω	ω	Omega

Referências

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