

Função	Primitiva	Função	Primitiva	Função	Primitiva
$u^r u'$ ( $r \neq -1$ )	$\frac{u^{r+1}}{r+1}$	$\frac{u'}{u}$	$\ln u $	$u'e^u$	$e^u$
$u'a^u$	$\frac{a^u}{\ln a}$	$u' \cos u$	$\sin u$	$u' \sin u$	$-\cos u$
$u' \sec^2 u$	$\operatorname{tg} u$	$u' \operatorname{cosec}^2 u$	$-\cot u$	$u' \sec u$	$\ln \sec u + \operatorname{tg} u $
$u' \operatorname{cosec} u$	$-\ln \operatorname{cosec} u + \cot u $	$\frac{u'}{\sqrt{1-u^2}}$	$-\arccos u$ ou $\arcsen u$	$\frac{u'}{1+u^2}$	$\operatorname{arctg} u$ ou $-\operatorname{arccot} u$
$u' \sec u \operatorname{tg} u$	$\sec u$	$u' \operatorname{cosec} u \cot u$	$-\operatorname{cosec} u$		

### Algumas fórmulas trigonométricas

$\sec x = \frac{1}{\cos x}$	$\operatorname{sen}(x \pm y) = \operatorname{sen} x \cos y \pm \cos x \operatorname{sen} y$	$\operatorname{sen}(2x) = 2 \operatorname{sen} x \cos x$
$\operatorname{cosec} x = \frac{1}{\operatorname{sen} x}$	$\cos(x \pm y) = \cos x \cos y \mp \operatorname{sen} x \operatorname{sen} y$	$\cos(2x) = \cos^2 x - \operatorname{sen}^2 x$
$1 + \operatorname{tg}^2 x = \sec^2 x$	$\cos x \cos y = \frac{1}{2}(\cos(x-y) + \cos(x+y))$	$\cos^2 x = \frac{1 + \cos(2x)}{2}$
$1 + \operatorname{cotg}^2 x = \operatorname{cosec}^2 x$	$\operatorname{sen} x \operatorname{sen} y = \frac{1}{2}(\cos(x-y) - \cos(x+y))$	$\operatorname{sen}^2 x = \frac{1 - \cos(2x)}{2}$

Função	Transformada	Função	Transformada	Função	Transformada
$t^n$ ( $n \in \mathbb{N}_0$ )	$\frac{n!}{s^{n+1}}$ ( $s > 0$ )	$e^{at}$ ( $a \in \mathbb{R}$ )	$\frac{1}{s-a}$ ( $s > a$ )	$\operatorname{sen}(at)$ ( $a \in \mathbb{R}$ )	$\frac{a}{s^2+a^2}$ ( $s > 0$ )
$\cos(at)$ ( $a \in \mathbb{R}$ )	$\frac{s}{s^2+a^2}$ ( $s > 0$ )	$\operatorname{senh}(at)$ ( $a \in \mathbb{R}$ )	$\frac{a}{s^2-a^2}$ ( $s >  a $ )	$\cosh(at)$ ( $a \in \mathbb{R}$ )	$\frac{s}{s^2-a^2}$ $s >  a $

### Propriedades da transformada de Laplace

$$F(s) = \mathcal{L}\{f(t)\}(s), \text{ com } s > s_f \quad \text{e} \quad G(s) = \mathcal{L}\{g(t)\}(s), \text{ com } s > s_g$$

$\mathcal{L}\{f(t) + g(t)\}(s) = F(s) + G(s), \ s > \max\{s_f, s_g\}$	$\mathcal{L}\{\alpha f(t)\}(s) = \alpha F(s), \ s > s_f \text{ e } \alpha \in \mathbb{R}$
$\mathcal{L}\{e^{\lambda t} f(t)\}(s) = F(s - \lambda), \ s > s_f + \lambda \text{ e } \lambda \in \mathbb{R}$	$\mathcal{L}\{t^n f(t)\}(s) = (-1)^n F^{(n)}(s), \ s > s_f \text{ e } n \in \mathbb{N}$
$\mathcal{L}\{H_a(t) \cdot f(t-a)\}(s) = e^{-as} F(s), \ s > s_f \text{ e } a > 0$	$\mathcal{L}\{f(at)\}(s) = \frac{1}{a} F\left(\frac{s}{a}\right), \ s > a s_f \text{ e } a > 0$

$$\mathcal{L}\{f^{(n)}(t)\}(s) = s^n F(s) - s^{n-1} f(0) - s^{n-2} f'(0) - \dots - s f^{(n-2)}(0) - f^{(n-1)}(0)$$

$$\text{com } s > \max\{s_f, s_{f'}, s_{f''}, \dots, s_{f^{(n-1)}}\}, \ n \in \mathbb{N}$$

$$\mathcal{L}\{(f * g)(t)\}(s) = F(s) \cdot G(s), \quad \text{onde} \quad (f * g)(t) = \int_0^t f(\tau)g(t-\tau) d\tau, \ t \geq 0$$