Série de Fourier ($\omega_0 = 2\pi/T_0$)	**Cálculo dos coeficientes**	**Fórmulas de conversão**
Trigonométrica	$a_0 = \dfrac{1}{T_0}\displaystyle\int_{T_0} f(t)\,dt$	$a_0 = C_0 = D_0$
$f(t) = a_0 + \displaystyle\sum_{n=1}^{\infty} a_n \cos n\omega_0 t + b_n \operatorname{sen} n\omega_0 t$	$a_n = \dfrac{2}{T_0}\displaystyle\int_{T_0} f(t)\cos n\omega_0 t\,dt$	$a_n - jb_n = C_n e^{j\theta_n} = 2D_n$
	$b_n = \dfrac{2}{T_0}\displaystyle\int_{T_0} f(t)\operatorname{sen} n\omega_0 t\,dt$	$a_n + jb_n = C_n e^{-j\theta_n} = 2D_{-n}$
Trigonométrica compacta	$C_0 = a_0$	$C_0 = D_0$
$f(t) = C_0 + \displaystyle\sum_{n=1}^{\infty} C_n \cos(n\omega_0 t + \theta_n)$	$C_n = \sqrt{a_n^2 + b_n^2}$	$C_n = 2\lvert D_n\rvert \qquad n \geq 1$
	$\theta_n = \tan^{-1}\left(\frac{-b_n}{a_n}\right)$	$\theta_n = \angle D_n$
Exponencial		
$f(t) = \displaystyle\sum_{n=-\infty}^{\infty} D_n e^{jn\omega_0 t}$	$D_n = \dfrac{1}{T_0}\displaystyle\int_{T_0} f(t)e^{-jn\omega_0 t}\,dt$	$P = \displaystyle\sum_{n=-\infty}^{\infty} \lvert D_n\rvert^2$
		$P = C_0^2 + \frac{1}{2}\sum_{n=1}^{\infty} C_n^2$

Transformada de Fourier: $X(\omega) = \displaystyle\int_{-\infty}^{\infty} x(t)e^{-j\omega t}\,dt, \quad x(t) = \dfrac{1}{2\pi}\displaystyle\int_{-\infty}^{\infty} X(\omega)e^{j\omega t}\,d\omega$

No.	$\boldsymbol{x(t)}$	$\boldsymbol{X(\omega)}$	
1	$e^{-at}u(t)$	$\dfrac{1}{a + j\omega}$	$a > 0$
2	$e^{at}u(-t)$	$\dfrac{1}{a - j\omega}$	$a > 0$
3	$e^{-a\lvert t\rvert}$	$\dfrac{2a}{a^2 + \omega^2}$	$a > 0$
4	$te^{-at}u(t)$	$\dfrac{1}{(a + j\omega)^2}$	$a > 0$
5	$t^n e^{-at}u(t)$	$\dfrac{n!}{(a + j\omega)^{n+1}}$	$a > 0$
6	$\delta(t)$	1	
7	1	$2\pi\delta(\omega)$	
8	$e^{j\omega_0 t}$	$2\pi\delta(\omega - \omega_0)$	
9	$\cos\omega_0 t$	$\pi[\delta(\omega - \omega_0) + \delta(\omega + \omega_0)]$	
10	$\operatorname{sen}\omega_0 t$	$j\pi[\delta(\omega + \omega_0) - \delta(\omega - \omega_0)]$	
11	$u(t)$	$\pi\delta(\omega) + \dfrac{1}{j\omega}$	

Propriedade	**Par de Transformadas**
Linearidade	$a_1x_1(t) + a_2x_2(t) \Leftrightarrow a_1X_1(\omega) + a_2X_2(\omega)$
Dualidade	$X(t) \Leftrightarrow 2\pi x(-\omega)$
Escalamento	$x(at) \Leftrightarrow \frac{1}{\lvert a\rvert}X(\omega/a)$
Deslocamento tempo	$x(t - t_0) \Leftrightarrow X(\omega)e^{-j\omega t_0}$
Deslocamento freq.	$x(t)e^{j\omega_0 t} \Leftrightarrow X(\omega - \omega_0)$
Diferenciação tempo	$\frac{d^n x}{dt^n} \Leftrightarrow (j\omega)^n X(\omega)$
Integração tempo	$\int_{-\infty}^{t} x(u)du \Leftrightarrow \frac{X(\omega)}{j\omega} + \pi X(0)\delta(\omega)$
Convolução tempo	$x_1(t) * x_2(t) \Leftrightarrow X_1(\omega)X_2(\omega)$
Convolução frequência	$x_1(t)x_2(t) \Leftrightarrow \frac{1}{2\pi}X_1(\omega) * X_2(\omega)$

$$E_x = \int_{-\infty}^{+\infty} |x(t)|^2 dt = \frac{1}{2\pi}\int_{-\infty}^{\infty} |X(\omega)|^2\, d\omega \qquad P_x = \lim_{T\to\infty}\frac{1}{T}\int_{-T/2}^{+T/2} |x(t)|^2 dt \tag{1}$$

$$P_x = \frac{1}{T_0}\int_{T_0} |x(t)|^2 dt \quad \text{(potência de um sinal periódico)} \tag{2}$$

$$X_{rms} = \sqrt{P_x} \tag{3}$$

$$\cos\omega t = \frac{e^{j\omega t} + e^{-j\omega t}}{2} \tag{4}$$

$$\text{sen}\omega t = \frac{e^{j\omega t} - e^{-j\omega t}}{2j} \tag{5}$$

$$e^{j\omega t} = \cos\omega t + j\text{sen}\omega t \tag{6}$$

$$e^{-j\omega t} = \cos\omega t - j\text{sen}\omega t \tag{7}$$

$$y(t) = x(t) * h(t) = \int_{-\infty}^{\infty} x(\tau)h(t-\tau)d\tau \tag{8}$$

$$X(s) = \int_{0^-}^{\infty} x(t)e^{-st}\, dt \tag{9}$$

Nº	**Sinal** $x(t)$	**Transformada** $X(s)$
1	$\delta(t)$	1
2	$u(t)$	$\frac{1}{s}$
3	$tu(t)$	$\frac{1}{s^2}$
4	$t^n u(t)$	$\frac{n!}{s^{n+1}}$
5	$e^{-at}u(t)$	$\frac{1}{s+a}$
6	$te^{-at}u(t)$	$\frac{1}{(s+a)^2}$
7	$t^n e^{-at}u(t)$	$\frac{n!}{(s+a)^{n+1}}$
8a	$\cos(\omega_0 t)u(t)$	$\frac{s}{s^2+\omega_0^2}$
8b	$\text{sen}(\omega_0 t)u(t)$	$\frac{\omega_0}{s^2+\omega_0^2}$
9a	$e^{-at}\cos(\omega_0 t)u(t)$	$\frac{s+a}{(s+a)^2+\omega_0^2}$
9b	$e^{-at}\text{sen}(\omega_0 t)u(t)$	$\frac{\omega_0}{(s+a)^2+\omega_0^2}$
10b	$re^{-at}\cos(bt+\theta)u(t)$	$\frac{0{,}5re^{j\theta}}{s+a-jb} + \frac{0{,}5re^{-j\theta}}{s+a+jb}$

Tabela 1: Tabela de transformada de Laplace (unilateral)