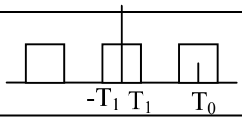
Tabelul 4.2. Proprietăţile transformării Fourier în timp

Semnalul aperiodic	Transformata Fourier
$x(t)$	$X(\omega)$
$y(t)$	$Y(\omega)$
$a\,x(t) + b\,y(t)$	$a\,X(\omega) + b\,Y(\omega)$
$x(t - t_o)\,,\ t_o \in R$	$e^{-j\omega t_o}\,X(\omega)$
$e^{j\omega_o t}\,x(t)\,,\ \omega_o \in R$	$X(\omega - \omega_o)$
$x^*(t)$	$X^*(-\omega)$
$x(-t) = x(t)$	$X(-\omega)$
$x(a\,t)\,,\ a \in R$	$\frac{1}{\lvert a \rvert} X\left(\frac{\omega}{a}\right)$
$x(t) * y(t)$	$X(\omega) \cdot Y(\omega)$
$x^*(\tau) * y(\tau)$	$X^*(\omega) \cdot Y(\omega)$
$x(t) \cdot y(t)$	$\frac{1}{2\pi}\,X(\omega) * Y(\omega)$
$\frac{d}{dt}\,x(t)$	$j\omega\,X(\omega)$
$\int_{-\infty}^{t} x(\tau)\,d\tau$	$\frac{1}{j\omega}\,X(\omega) + \pi\,X(0)\,\delta(\omega)$
$t\,x(t)$	$j\,\frac{d}{d\omega}\,X(\omega)$
$x(t) \in R$	$X(\omega) = X^*(-\omega)$ $\lvert X(\omega) \rvert = \lvert X(-\omega) \rvert$; $Arg\ X(\omega) = -Arg\ X(-\omega)$ $Re\{X(\omega)\} = Re\{X(-\omega)\}$ $Im\{X(\omega)\} = -Im\{X(-\omega)\}$
$x_p(t) \leftrightarrow Re\{X(\omega)\} \qquad x_i(t) \leftrightarrow j\,Im\{X(\omega)\}$	
$\int_{-\infty}^{\infty} \lvert x(t) \rvert^2\,dt = \frac{1}{2\pi} \int_{-\infty}^{\infty} \lvert X(\omega) \rvert^2\,d\omega$	
$x(t) \leftrightarrow X(\omega)$ $X(t) \leftrightarrow 2\pi\,x(-\omega)$	

Tabelul 4.3. Perechi semnal - transformată

Semnalul	Transformata Fourier	Coeficienţii seriei exponenţiale (pentru semnale periodice)
$\sum_k c_k e^{jk\omega_o t}$	$\sum_k 2\pi c_k \delta(\omega - k\omega_o)$	$\{c_k\}$
$e^{j\omega_o t}$	$2\pi\,\delta(\omega - \omega_o)$	$c_1 = 1\ ;\ c_k = 0\ \ k \neq 1$
$\cos\,\omega_o t$	$\pi\,[\delta(\omega - \omega_o) + \delta(\omega + \omega_o)]$	$c_1 = c_{-1} = \frac{1}{2}\ ;\ c_k = 0, k \notin \{-1, 1\}$
$\sin\,\omega_o t$	$\frac{\pi}{j}[\delta(\omega - \omega_o) - \delta(\omega + \omega_o)]$	$c_1 = -c_{-1} = \frac{1}{2j}\ ;\ c_k = 0\ , k \notin \{-1, 1\}$
$x(t) = 1(constanta)$	$2\pi \cdot \delta(\omega)$	$c_0 = 1\ ;\ c_k = 0, k \neq 0$
	$\sum_{k=-\infty}^{\infty} \frac{2\sin k\omega_o T_1}{k}\delta(\omega - k\omega_o)$	$c_k = \frac{\sin k\omega_o T_1}{k\pi}\ , k \neq 0\ ;\ c_0 = \frac{2T_1}{T_o}$
$\delta_T(t) = \sum_{k=-\infty}^{\infty} \delta(t - kT)$	$\omega_o \delta_{\omega_o}(\omega) = \frac{2\pi}{T} \sum_{k=-\infty}^{\infty} \delta(\omega - k\frac{2\pi}{T})$	$c_k = \frac{1}{T}$
$p_\tau(t) = \begin{cases} 1\ , & \lvert t \rvert < \tau \\ 0\ , & \lvert t \rvert > \tau \end{cases}$	$\frac{2\sin\omega\tau}{\omega}$	—
$\frac{\sin\omega_o t}{\pi t}$	$p_{\omega_o}(\omega) = \begin{cases} 1\ , & \lvert\omega\rvert < \omega_o \\ 0\ , & \lvert\omega\rvert > \omega_o \end{cases}$	—
$\delta(t)$	$1(constanta)$	—
$\delta(t - t_o)\ \ t_o \in R$	$e^{-j\omega t_o}$	—
$\sigma(t)$	$\frac{1}{j\omega} + \pi\,\delta(\omega)$	—
$e^{-at}\sigma(t)\,; Re\{a\} > 0$	$(a + j\omega)^{-1}$	—
$t\,e^{-at}\sigma(t); Re\{a\} > 0$	$(a + j\omega)^{-2}$	—
$\frac{t^{n-1}e^{-at}}{(n-1)!}\sigma(t)\ ;\ Re\{a\} > 0$	$(a + j\omega)^{-n}$	—