$$\begin{cases} X(\omega) = \mathscr{F}\{x(t)\} = \displaystyle\int_{-\infty}^{\infty} x(t).e^{-j\omega t}\,dt \\[4mm] x(t) = \mathscr{F}^{-1}\{X(\omega)\} = \dfrac{1}{2\pi}\displaystyle\int_{-\infty}^{\infty} X(\omega).e^{j\omega t}\,d\omega \end{cases} \longmapsto x(t) \Leftrightarrow X(\omega)$$

İşaret → **FD** Fourier Dönüşümü → Farklı genlik ve frekanslarda bileşenler
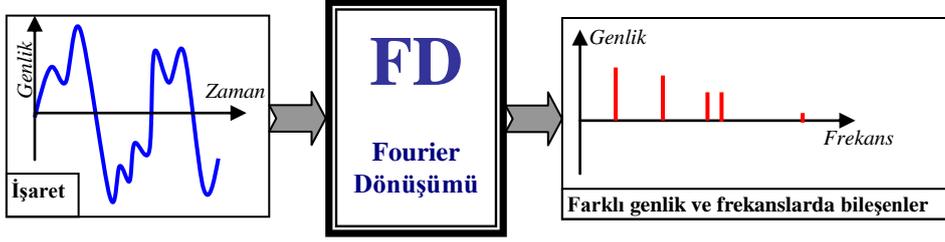
Özellik		İfade
Doğrusallık		$\alpha x_1(t) + \beta x_2(t) \Leftrightarrow \alpha X_1(\omega) + \beta X_2(\omega)$
Simetri		$X(t) \Leftrightarrow 2\pi x(-\omega)$
Konvolüsyon		$x_1(t) * x_2(t) \Leftrightarrow X_1(\omega)X_2(\omega)$
Öteleme	*Zaman*	$x(t - t_0) \Leftrightarrow e^{-j\omega t_0} X(\omega)$
	Frekans	$e^{j\omega_0 t} x(t) \Leftrightarrow X(\omega - \omega_0)$
Ölçekleme	*Zaman*	$x(\alpha t) \Leftrightarrow \dfrac{1}{|\alpha|} X\left(\dfrac{\omega}{\alpha}\right)$
	Frekans	$X(\alpha\omega) \Leftrightarrow \dfrac{1}{|\alpha|} x\left(\dfrac{t}{\alpha}\right)$
Türev	*Zaman*	$\dfrac{dx(t)}{dt} \Leftrightarrow j\omega X(\omega)$
	Frekans	$\dfrac{dX(\omega)}{d\omega} \Leftrightarrow (-jt)x(t)$
İntegral		$\displaystyle\int_{-\infty}^{t} x(\tau)\,d\tau \Leftrightarrow \pi X(0)\delta(\omega) + \dfrac{1}{j\omega} X(\omega)$
Moment		$\displaystyle\int_{-\infty}^{\infty} t^n x(t)\,dt \Leftrightarrow (-j)^n \left.\dfrac{d^n X(\omega)}{d\omega^n}\right|_{\omega=0}$
Geri dönüş		$x(-t) \Leftrightarrow X(-\omega)$
Parseval bağıntıları		$\displaystyle\int_{-\infty}^{\infty} |x(t)|^2\,dt = \dfrac{1}{2\pi}\displaystyle\int_{-\infty}^{\infty} |X(\omega)|^2\,d\omega$
		$\displaystyle\int_{-\infty}^{\infty} x_1(t)x_2(t)\,dt = \dfrac{1}{2\pi}\displaystyle\int_{-\infty}^{\infty} X_1(\omega)X_2(-\omega)\,d\omega$
		$\displaystyle\int_{-\infty}^{\infty} x_1(\tau)X_2(\tau)\,d\tau = \displaystyle\int_{-\infty}^{\infty} X_1(\tau)x_2(\tau)\,d\tau$
Poisson toplamı		$\displaystyle\sum_{n=-\infty}^{\infty} x(\alpha t + 2\pi\alpha n) = \dfrac{1}{2\pi\alpha}\displaystyle\sum_{k=-\infty}^{\infty} X\left(\dfrac{k}{\alpha}\right)e^{jkt}$