Fourierjeva transformacija. Če je $f\colon \mathbb{R} \to \mathbb{C}$, je njena Fourierjeva transformiranka definirana kot

$$\widehat{f}(\xi) = \frac{1}{\sqrt{2\pi}} \int_{-\infty}^{\infty} f(x) e^{-ix\xi} \mathrm{d}x$$

Ima sledeče lastnosti:

$$\widehat{f(x)e^{itx}}(\xi) = \widehat{f}(\xi - t)$$

$$\widehat{f(ax)} = \frac{1}{a}\widehat{f}\left(\frac{\xi}{a}\right)$$

$$\widehat{f(x-t)}(\xi) = \widehat{f}(\xi)e^{-it\xi}$$

Inverzna Fourierjeva transformacija:

$$f(x) = \frac{1}{\sqrt{2\pi}} \int_{-\infty}^{\infty} \widehat{f}(\xi) e^{-ix\xi} \mathrm{d}\xi$$

Velja $\widehat{\widehat{f}}(x) = f(-x)$

Tabela znanih transofrmacij. Ravno tako pa prav pride sledeče dejstvo:

$f(x)$	$\widehat{f}(\xi)$
$e^{-\lvert x\rvert}$	$\sqrt{\frac{1}{\pi}}\frac{1}{1+\xi^2}$
$e^{-a^2x^2/2}$	$\frac{1}{a}e^{-\xi^2/2a^2}$ $(a > 0)$
$\chi_{[a,a]}(x)$	$\sqrt{\frac{2}{\pi}}\frac{\sin(a\xi)}{\xi}$
$\frac{1}{1+x^2}$	$\sqrt{\frac{\pi}{2}}e^{-\lvert\xi\rvert}$
e^{-ax^2}	$\frac{1}{\sqrt{2a}}e^{-\xi^2/4a}$

$$\widehat{f'(x)} = i\xi\widehat{f}(\xi)$$

$$\widehat{f''(x)} = -\xi^2\widehat{f}(\xi)$$