

Concise Table of Fourier Transforms

$f(x)$	$\widehat{f}(k)$
1	$\sqrt{2\pi} \delta(k)$
$\delta(x)$	$\frac{1}{\sqrt{2\pi}}$
$\sigma(x)$	$\sqrt{\frac{\pi}{2}} \delta(k) - \frac{i}{\sqrt{2\pi} k}$
sign x	$-i \sqrt{\frac{2}{\pi}} \frac{1}{k}$
$\sigma(x+a) - \sigma(x-a)$	$\sqrt{\frac{2}{\pi}} \frac{\sin ak}{k}$
$e^{-ax} \sigma(x)$	$\frac{1}{\sqrt{2\pi} (a+ik)}$
$e^{ax} (1 - \sigma(x))$	$\frac{1}{\sqrt{2\pi} (a-ik)}$
$e^{-a x }$	$\sqrt{\frac{2}{\pi}} \frac{a}{k^2 + a^2}$
e^{-ax^2}	$\frac{e^{-k^2/(4a)}}{\sqrt{2a}}$
$\tan^{-1} x$	$-i \sqrt{\frac{\pi}{2}} \frac{e^{- k }}{k}$
$f(cx+d)$	$\frac{e^{ikd/c}}{ c } \widehat{f}\left(\frac{k}{c}\right)$
$\overline{f(x)}$	$\overline{\widehat{f}(-k)}$
$\widehat{f}(x)$	$f(-k)$
$f'(x)$	$ik \widehat{f}(k)$
$xf(x)$	$i \widehat{f}'(k)$
$f * g(x)$	$\sqrt{2\pi} \widehat{f}(k) \widehat{g}(k)$

Note: The parameters a, c, d are real, with $a > 0$ and $c \neq 0$.