

Table 1.15.1 Fourier integral transforms for a few simple functions when all relevant integrals are proper

$f(t)$	$g(\omega)$	$f(t)$	$g(\omega)$
$\frac{d^n f(t)}{dt^n}$	$(j\omega)^n g(\omega)$	$e^{j\omega t}$	$\delta(\omega - \omega)$
$(-jt)^n f(t)$	$\frac{d^n g(\omega)}{d\omega^n}$	$\delta(t - \tau)$	$\frac{1}{2\pi} e^{-j\omega\tau}$
$f(t)e^{j\omega t}$	$g(\omega - \omega)$	$1(t + \tau) - 1(t - \tau)$	$\frac{1}{\pi} \frac{\sin \omega\tau}{\omega}$
$f(t - \tau)$	$g(\omega)e^{-j\omega\tau}$	$e^{-bt} \cdot 1(t)$	$\frac{1}{2\pi} \frac{1}{j\omega + b}$
$\delta(t)$	$\frac{1}{2\pi}$	$e^{j\omega t} \cdot 1(t)$	$\frac{1}{2\pi} \frac{j}{\omega - \omega}$
1	$\delta(\omega)$	$(\cos \omega t) \cdot 1(t)$	$\frac{1}{2\pi} \frac{j\omega}{\omega^2 - \omega^2}$
1(t)	$\frac{1}{2\pi} \frac{1}{j\omega}$	$(\sin \omega t) \cdot 1(t)$	$\frac{1}{2\pi} \frac{\omega}{\omega^2 - \omega^2}$