Fourier Transform Pairs

Signal	Fourier Transfrom
$\sum_{n=-\infty}^{\infty} c_n e^{jn\omega_o t}$	$2\pi \sum_{n=-\infty}^{\infty} c_n \delta(\omega - n\omega_o)$
$e^{j\omega_o t}$	$2\pi\delta(\omega - \omega_o)$
$\cos\omega_o t$	$\pi[\delta(\omega + \omega_o) + \delta(\omega - \omega_o)]$
$\sin\omega_o t$	$j\pi[\delta(\omega + \omega_o) - \delta(\omega - \omega_o)]$
1	$2\pi\delta(\omega)$
$\delta(t)$	1
$u(t)$	$\frac{1}{j\omega} + \pi\delta(\omega)$
$\delta(t - t_o)$	$e^{-j\omega t_o}$
$e^{-at}u(t),\ a > 0$	$\frac{1}{a + j\omega}$
$x(t) = \begin{cases} 1, & \lvert t\rvert < \tau \\ 0, & \lvert t\rvert > \tau \end{cases}$	$\frac{2\sin\omega\tau}{\omega} = 2\tau Sa(\omega\tau)$
$\frac{\sin\omega_c t}{\pi t} = \frac{\omega_c}{\pi} Sa(\omega_c t)$	$X(\omega) = \begin{cases} 1, & \lvert\omega\rvert < \omega_c \\ 0, & \lvert\omega\rvert > \omega_c \end{cases}$
$\sum_{n=-\infty}^{\infty} \delta(t - nT)$	$\frac{2\pi}{T} \sum_{k=-\infty}^{\infty} \delta\left(\omega - \frac{2\pi k}{T}\right)$