

Table of Fourier Transform Pairs		
<i>Signal Name</i>	<i>Time-Domain: $x(t)$</i>	<i>Frequency-Domain: $X(j\omega)$</i>
Right-sided exponential	$e^{-at}u(t) \quad (a > 0)$	$\frac{1}{a + j\omega}$
Left-sided exponential	$e^{bt}u(-t) \quad (b > 0)$	$\frac{1}{b - j\omega}$
Square pulse	$[u(t + T/2) - u(t - T/2)]$	$\frac{\sin(\omega T/2)}{\omega/2}$
“sinc” function	$\frac{\sin(\omega_0 t)}{\pi t}$	$[u(\omega + \omega_0) - u(\omega - \omega_0)]$
Impulse	$\delta(t)$	1
Shifted impulse	$\delta(t - t_0)$	$e^{-j\omega t_0}$
Complex exponential	$e^{j\omega_0 t}$	$2\pi\delta(\omega - \omega_0)$
General cosine	$A \cos(\omega_0 t + \phi)$	$\pi A e^{j\phi} \delta(\omega - \omega_0) + \pi A e^{-j\phi} \delta(\omega + \omega_0)$
Cosine	$\cos(\omega_0 t)$	$\pi\delta(\omega - \omega_0) + \pi\delta(\omega + \omega_0)$
Sine	$\sin(\omega_0 t)$	$-j\pi\delta(\omega - \omega_0) + j\pi\delta(\omega + \omega_0)$
General periodic signal	$\sum_{k=-\infty}^{\infty} a_k e^{jk\omega_0 t}$	$\sum_{k=-\infty}^{\infty} 2\pi a_k \delta(\omega - k\omega_0)$
Impulse Train	$\sum_{n=-\infty}^{\infty} \delta(t - nT)$	$\frac{2\pi}{T} \sum_{k=-\infty}^{\infty} \delta(\omega - 2\pi k/T)$

Table of Fourier Transform Properties		
<i>Property Name</i>	<i>Time-Domain $x(t)$</i>	<i>Frequency-Domain $X(j\omega)$</i>
Linearity	$ax_1(t) + bx_2(t)$	$aX_1(j\omega) + bX_2(j\omega)$
Conjugation	$x^*(t)$	$X^*(-j\omega)$
Time-Reversal	$x(-t)$	$X(-j\omega)$
Scaling	$x(at)$	$\frac{1}{ a } X(j\omega/a)$
Delay	$x(t - t_d)$	$e^{-j\omega t_d} X(j\omega)$
Modulation	$x(t)e^{j\omega_0 t}$	$X(j(\omega - \omega_0))$
Modulation	$x(t) \cos(\omega_0 t)$	$\frac{1}{2} X(j(\omega - \omega_0)) + \frac{1}{2} X(j(\omega + \omega_0))$
Differentiation	$\frac{d^k x(t)}{dt^k}$	$(j\omega)^k X(j\omega)$
Convolution	$x(t) * h(t)$	$X(j\omega)H(j\omega)$
Multiplication	$x(t)p(t)$	$\frac{1}{2\pi} X(j\omega) * P(j\omega)$

Table of z-Transform Pairs		
<i>Signal Name</i>	<i>Time-Domain: $x[n]$</i>	<i>z-Domain: $X(z)$</i>
Impulse	$\delta[n]$	1
Shifted impulse	$\delta[n - n_0]$	z^{-n_0}
Right-sided exponential	$a^n u[n]$	$\frac{1}{1 - az^{-1}}$
General cosine	$r^n \cos(\hat{\omega}_0 n) u[n]$	$\frac{1 - r \cos(\hat{\omega}_0) z^{-1}}{1 - 2r \cos(\hat{\omega}_0) z^{-1} + r^2 z^{-2}}$

Table of z-Transform Properties		
<i>Property Name</i>	<i>Time-Domain $x[n]$</i>	<i>z-Domain $X(z)$</i>
Linearity	$ax_1[n] + bx_2[n]$	$aX_1(z) + bX_2(z)$
Delay	$x[n - n_d]$	$z^{-n_d} X(z)$
Convolution	$x[n] * h[n]$	$X(z)H(z)$