

Transform Pairs		Transform Properties	
Time Domain	z Domain	Time Domain	z Domain
$A\delta[n]$	A	$\alpha f[n] + \beta g[n]$	$\alpha \hat{F}(z) + \beta \hat{G}(z)$
$A\delta[n - q]$ ($q \geq 0$ & integer)	Az^{-q}	$f[n - q]$ ($q \geq 1$ & integer)	$z^{-q} \hat{F}(z) + \sum_{p=1}^q f[-p]z^{(p-q)}$
$u[n]$	$\frac{1}{1 - z^{-1}} = \frac{z}{z - 1}$	$f[n + q]$ ($q \geq 1$ & integer)	$z^{+q} \hat{F}(z) - \sum_{p=0}^{q-1} f[p]z^{q-p}$
$u[n] - u[n - L]$ ($L > 0$ & integer)	$\frac{z^L - 1}{z^{L-1}(z - 1)}$	$nf[n]$	$-z \frac{d}{dz} \hat{F}(z)$
$a^n u[n]$ ($ a \leq 1$)	$\frac{1}{1 - az^{-1}} = \frac{z}{z - a}$	$a^n f[n]$	$\hat{F}\left(\frac{z}{a}\right)$
$nu[n]$	$\frac{z^{-1}}{(1 - z^{-1})^2} = \frac{z}{(z - 1)^2}$	$(f[n] \cdot u[n]) * (g[n] \cdot u[n])$	$\hat{F}(z) \hat{G}(z)$
$\cos(\Omega_o n) u[n]$	$\frac{0.5z}{z - e^{-j\Omega_o}} + \frac{0.5z}{z - e^{+j\Omega_o}}$ $= \frac{z^2 - z \cos(\Omega_o)}{z^2 - 2z \cos(\Omega_o) + 1}$	$\cos(\Omega_o n) f[n]$	$\frac{1}{2} \left[\hat{F}(ze^{j\Omega_o}) + \hat{F}(ze^{-j\Omega_o}) \right]$
$\sin(\Omega_o n) u[n]$	$\frac{0.5jz}{z - e^{-j\Omega_o}} - \frac{0.5jz}{z - e^{+j\Omega_o}}$ $= \frac{z \sin(\Omega_o)}{z^2 - 2z \cos(\Omega_o) + 1}$	$\sin(\Omega_o n) f[n]$	$\frac{1}{2j} \left[-\hat{F}(ze^{j\Omega_o}) + \hat{F}(ze^{-j\Omega_o}) \right]$
$a^n \cos(\Omega_o n) u[n]$ ($ a \leq 1$)	$\frac{0.5z}{z - ae^{-j\Omega_o}} + \frac{0.5z}{z - ae^{+j\Omega_o}}$ $= \frac{z^2 - za \cos(\Omega_o)}{z^2 - 2za \cos(\Omega_o) + a^2}$	$f^*[n]$	$\hat{F}^*(z)$
$a^n \sin(\Omega_o n) u[n]$ ($ a \leq 1$)	$\frac{0.5jz}{z - ae^{-j\Omega_o}} - \frac{0.5jz}{z - ae^{+j\Omega_o}}$ $= \frac{az \sin(\Omega_o)}{z^2 - 2za \cos(\Omega_o) + a^2}$	$f[n] - f[n - 1]$	$(1 - z^{-1}) \hat{F}(z) - f[-1]$
$e^{j\Omega_o n} u[n]$	$\frac{1}{1 - e^{j\Omega_o} z^{-1}} = \frac{z}{z - e^{j\Omega_o}}$	$e^{j\Omega_o n} f[n]$	$\hat{F}(ze^{-j\Omega_o})$