

Sequence	Transform	Region of Convergence
Elementary Functions		
1. $\delta[k]$	1	All z
2. $\delta[k - k_0]$	z^{-k_0}	All z , except $z = 0$ or $z = \text{inf.}$
3. $1[k]$	$\frac{z}{z-1}$	$ z > 1$
4. $a^k 1[k]$	$\frac{z}{z-a}$	$ z > a $
5. $k 1[k]$	$\frac{z}{(z-1)^2}$	$ z > 1$
6. $\cos[bk] 1[k]$	$\frac{z(z - \cos(b))}{z^2 - 2 \cos(b)z + 1}$	$ z > 1$
7. $\sin[bk] 1[k]$	$\frac{\sin(b)z}{z^2 - 2 \cos(b)z + 1}$	$ z > 1$
8. $a^k \cos[bk] 1[k]$	$\frac{z(z - a \cos(b))}{z^2 - 2a \cos(b)z + a^2}$	$ z > a $
9. $a^k \sin[bk] 1[k]$	$\frac{a \sin(b)z}{z^2 - 2a \cos(b)z + a^2}$	$ z > a $
10. $\frac{(k+M-1)!}{(M-1)!k!} a^k 1[k]$	$\frac{z^M}{(z-a)^M}$	$ z > a $
11. $\frac{a^{ k }}{1-a^2}$	$\left(\frac{z}{z-a}\right)\left(\frac{z^{-1}}{z^{-1}-a}\right)$	$\frac{1}{ a } > z > a $
z-Transform Properties		
13. $kx[k]$	$-z \frac{dX(z)}{dz}$	Differentiation
14. $x[k - k_0]$	$z^{-k_0} X(z)$	Time-shifting
Table 7.1. Common z-Transform Pairs		