

TABLE 5.1 Select (Unilateral) z -Transform Pairs

No.	$x[n]$	$X[z]$
1	$\delta[n - k]$	z^{-k}
2	$u[n]$	$\frac{z}{z - 1}$
3	$nu[n]$	$\frac{z}{(z - 1)^2}$
4	$n^2u[n]$	$\frac{z(z + 1)}{(z - 1)^3}$
5	$n^3u[n]$	$\frac{z(z^2 + 4z + 1)}{(z - 1)^4}$
6	$\gamma^n u[n]$	$\frac{z}{z - \gamma}$
7	$\gamma^{n-1} u[n - 1]$	$\frac{1}{z - \gamma}$
8	$n\gamma^n u[n]$	$\frac{\gamma z}{(z - \gamma)^2}$
9	$n^2\gamma^n u[n]$	$\frac{\gamma z(z + \gamma)}{(z - \gamma)^3}$
10	$\frac{n(n - 1)(n - 2) \cdots (n - m + 1)}{\gamma^m m!} \gamma^n u[n]$	$\frac{z}{(z - \gamma)^{m+1}}$
11a	$ \gamma ^n \cos \beta n u[n]$	$\frac{z(z - \gamma \cos \beta)}{z^2 - (2 \gamma \cos \beta)z + \gamma ^2}$
11b	$ \gamma ^n \sin \beta n u[n]$	$\frac{z \gamma \sin \beta}{z^2 - (2 \gamma \cos \beta)z + \gamma ^2}$
12a	$r \gamma ^n \cos(\beta n + \theta)u[n]$	$\frac{rz[z \cos \theta - \gamma \cos(\beta - \theta)]}{z^2 - (2 \gamma \cos \beta)z + \gamma ^2}$
12b	$r \gamma ^n \cos(\beta n + \theta)u[n] \quad \gamma = \gamma e^{j\beta}$	$\frac{(0.5re^{j\theta})z}{z - \gamma} + \frac{(0.5re^{-j\theta})z}{z - \gamma^*}$
12c	$r \gamma ^n \cos(\beta n + \theta)u[n]$	$\frac{z(Az + B)}{z^2 + 2az + \gamma ^2}$
	$r = \sqrt{\frac{A^2 \gamma ^2 + B^2 - 2AaB}{ \gamma ^2 - a^2}}$	
	$\beta = \cos^{-1} \frac{-a}{ \gamma }$	
	$\theta = \tan^{-1} \frac{Aa - B}{A\sqrt{ \gamma ^2 - a^2}}$	