TABLE 5.1. Z-transform pairs

No.	$x(n)$ for $n = 0, 1, 2, 3, \ldots$ $x(n) = 0$ for $n = -1, -2, -3, \ldots$	$\tilde{x}(z) = \sum_{n=0}^{\infty} x(n)z^{-n}$
1.	1	$z/z-1$
2.	a^n	$z/z-a$
3.	a^{n-1}	$\frac{1}{z-a}$
4.	n	$z/(z-1)^2$
5.	n^2	$z(z+1)/(z-1)^3$
6.	n^3	$z(z^2+4z+1)/(z-1)^4$
7.	n^k	$(-1)^k D^k \left(\frac{z}{z-1}\right)$; $D = z\,\frac{d}{dz}$
8.	na^n	$az/(z-a)^2$
9.	n^2a^n	$az(z+a)/(z-a)^3$
10.	n^3a^n	$az(z^2+4az+a^2)/(z-a)^4$
11.	$n^k a^n$	$(-1)^k D^k \left(\frac{z}{z-a}\right)$; $D = z\,\frac{d}{dz}$
12.	$\sin n\omega$	$z \sin \omega /$ $(z^2 - 2z \cos \omega + 1)$
13.	$\cos n\omega$	$z(z - \cos \omega)/$ $(z^2 - 2z \cos \omega + 1)$
14.	$a^n \sin n\omega$	$az \sin n\omega/$ $(z^2 - 2az \cos \omega + a^2)$
15.	$a^n \cos n\omega$	$z(z - a \cos \omega)/$ $(z^2 - 2az \cos \omega + a^2)$
16.	$\delta_0(n)$	1
17.	$\delta_m(n)$	z^{-m}
18.	$a^n/n!$	$e^{a/z}$
19.	$\cosh n\omega$	$z(z - \cosh \omega)/$ $(z^2 - 2z \cosh \omega + 1)$
20.	$\sinh n\omega$	$z \sinh \omega/$ $(z^2 - 2z \cosh \omega + 1)$
21.	$\frac{1}{n}$, $n > 0$	$\ln(z/z-1)$
22.	$e^{-\omega n}x(n)$	$\tilde{x}(e^{\omega}z)$
23.	$n^{(2)} = n(n-1)$	$2z/(z-1)^3$
24.	$n^{(3)} = n(n-1)(n-2)$	$3!z/(z-1)^4$
25.	$n^{(k)} = n(n-1)\cdots(n-k+1)$	$k!z/(z-1)^{k+1}$
26.	$x(n-k)$	$z^{-k}\tilde{x}(z)$
27.	$x(n+k)$	$z^k\tilde{x}(z) - \sum_{r=0}^{k-1} x(r)z^{k-r}$

We now can apply the Routh stability criterion [77] to $Q(s)$ to check whether all the zeros of $Q(s)$ are in the left half-plane. If this is the case, then we know for