Sequence	Z-transform	ROC
$\delta[n]$	1	$\forall z$
$\alpha^n \mu[n]$	$\frac{1}{1-\alpha z^{-1}}$	$\lvert z\rvert > \lvert\alpha\rvert$
$-(\alpha)^n \mu[-n-1]$	$\frac{1}{1-\alpha z^{-1}}$	$\lvert z\rvert < \lvert\alpha\rvert$
$n\alpha^n \mu[n]$	$\frac{\alpha z^{-1}}{(1-\alpha z^{-1})^2}$	$\lvert z\rvert > \lvert\alpha\rvert$
$-n\alpha^n \mu[-n-1]$	$\frac{\alpha z^{-1}}{(1-\alpha z^{-1})^2}$	$\lvert z\rvert < \lvert\alpha\rvert$

Table 1: Z-transforms and ROCs associated with several elementary sequences.

Sequence	Z-transform	ROC
$g[n]$	$G(z)$	R_g
$h[n]$	$H(z)$	R_h
$g^*[n]$	$G^*(z^*)$	R_g
$g[-n]$	$G(\frac{1}{z})$	$\frac{1}{R_g}$
$\alpha g[n] + \beta h[n]$	$\alpha G(z) + \beta H(z)$	includes $R_g \cap R_h$
$g[n-n_0]$	$z^{-n_0} G(z)$	R_g except maybe $z = 0$ or $z = \infty$
$\alpha^n g[n]$	$G(\frac{z}{\alpha})$	$\lvert\alpha\rvert R_g$
$ng[n]$	$-z\frac{dG(z)}{dz}$	R_g except maybe $z = 0$ or $z = \infty$
$g[n] \otimes h[n]$	$G(z)H(z)$	includes $R_g \cap R_h$

Table 2: Most important properties of the Z-transform. R_g denotes the region of the z-plane $R_{g-} < |z| < R_{g+}$ and R_h denotes the region $R_{h-} < |z| < R_{h+}$. Then $1/R_g$ denotes the region $1/R_{g+} < |z| < 1/R_{g-}$.

Property of $g[n]$	ROC of $G(z)$
Finite length $g[n] = 0 \; \forall n > M \; \forall n < N$	All z-plane except except $z = 0$ if $M > 0$ except $z = \infty$ if $N < 0$
Causal $g[n] = 0 \; \forall n < 0$	$R_{g-} < \lvert z \rvert$
Anticausal $g[n] = 0 \; \forall n > 0$	$\lvert z \rvert < R_{g+}$
Left-sided $g[n] = 0 \; \forall n > N$ with $N > 0$	$0 < \lvert z \rvert < R_{g+}$
Right-sided $g[n] = 0 \; \forall n < M$ with $M < 0$	$R_{g-} < \lvert z \rvert < \infty$

Table 3: Properties of the ROC of the Z-transform of a sequence depending on the span of the sequence in time-domain.