Nome: Nicole Migliorini Magagnin

Lista Matemática Aplicada – Transformada Z

Prof: Walter Gontijo

1) Determine as transformadas z das seguintes funções:

a) $x(k) = -2u(k) + 0{,}7^k \, u(k)$

2.	$u[n]$	$\dfrac{1}{1-z^{-1}}$
3.	$a^n u[n]$	$\dfrac{1}{1-az^{-1}}$

$$x[k] = -2 * \frac{1}{1-z^{-1}} + \frac{1}{1-0{,}7z^{-1}}$$

$$x[k] = -\frac{2}{1-z^{-1}} + \frac{1}{1-0{,}7z^{-1}}$$

b) $x(k) = u(k-2) + \delta(k-1)$

2.	$u[n]$	$\dfrac{1}{1-z^{-1}}$

$$x[n-k] \xleftrightarrow{\;\mathcal{Z}\;} z^{-k}X(z).$$

$$x[k] = z^{-2} * = -\frac{1}{1-z^{-1}} + z^{-k}$$

$$x[k] = \frac{1}{z^2} * \frac{1}{1-z^{-1}} + z$$

$$x[k] = z + \frac{1}{z(z-1)}$$

c) $x(k) = \left(1 - 0{,}5^k\right)u(k)$

2.	$u[n]$	$\dfrac{1}{1-z^{-1}}$
3.	$a^n u[n]$	$\dfrac{1}{1-az^{-1}}$

$$X[k] = 1u(k) - 0,5^k\, u(k)$$

$$x[k] = 1 * \frac{1}{1-z^{-1}} - \frac{1}{1-0,5z^{-1}}$$

$$x[k] = \frac{1}{1-z^{-1}} - \frac{1}{1-0,5z^{-1}}$$

d) $x(k) = 2\delta\,(k) - 3\left(0,5^k\, u(k)\right)$

1.	$\delta[n]$	1
3.	$a^n u[n]$	$\dfrac{1}{1-az^{-1}}$

$$x[k] = 2 - 3 * \frac{1}{1-0,5z^{-1}}$$