

## Discrete time systems and z-transform

### Exercises module 3

1. Find the z-transform and the ROC for the following sequences

- a.  $x[n] = \left(\frac{1}{3}\right)^n u[-n]$
- b.  $x[n] = \left(\frac{1}{3}\right)^n (u[n] - u[n - 5])$
- c.  $x[n] = n u[n] - (n - N)u[n - N]$
- d.  $x[n] = a^{|n|} \quad 0 \leq |a| < 1$
- e.  $x[n] = \begin{cases} 1 & 0 \leq n \leq N - 1 \\ 0 & n \geq N \\ 0 & n < 0 \end{cases}$