

Exercises Week 5

DSP

1. Find the Z transform of the following signals:

b.

$$x[n] = \begin{cases} \left(\frac{1}{3}\right)^n, & n \geq 0 \\ \left(\frac{1}{2}\right)^{-n}, & n < 0 \end{cases}$$

c.

$$x[n] = \left(\frac{1}{2}\right)^n \sin\left(\frac{\pi}{3}n\right)u[n]$$

2. Find all the signals $x[n]$ which have the Z transform

$$X(z) = \frac{7}{(1 - 2z^{-1})(1 + 0.5z^{-1})}$$