



**Homework 2**  
**EE 341: Signals & Systems**

Date: 2.12.2020

This is an open book HW  
The use of calculators is allowed

Student Name: .....

Student Number: .....

**Problem : (Z transform)**

For each of the following signals  $x(n)$  given below, find the expression  $X(z) = Z[x(n)]$  in the frequency domain, and depict the corresponding ROC.

1)  $x(n) = u(n - 2) * \left(\frac{2}{3}\right)^n u(n)$ .

2)  $x(n) = \sin\left(\frac{n\pi}{8} - \frac{\pi}{4}\right)u(n - 2)$

3)  $x(n) = (n - 1) \left(\frac{1}{2}\right)^n u(n - 1) * \left(\frac{1}{3}\right)^n u(n + 1)$

4)  $x(n) = (2)^n u(-n - 3)$

where  $u(n)$  is the unit step.

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