ECED 4601 Digital Control Systems

Assignment #1

http://www.jasongu.org/4601/assignments.html

Due date: September 19 2017. Late submission will not be accepted.

Assignment #1 contains the following problems:

1) Problem B-2-2: Obtain the z transform of k^3

2) B2-2-5: find the z transform of

   $x(k) = \sum_{h=0}^{k} a^h$, where a is a constant

3) B-2-8: obtain the inverse z transform of

$$x(z) = \frac{1 + 2z + 3z^2 + 4z^3 + 5z^4}{z^4}$$

4) B-2-13: by using the inversion method, obtain the inverse z transform of

$$x(z) = \frac{1 + 6z^{-2} + z^{-3}}{(1 - z^{-1})(1 - 0.2z^{-1})}$$

5) B-2-17

   Solve the following difference equation:

   $x(k+2) - x(k+1) + 0.25x(k) = u(k+2)$

   Where $x(0) = 1$ and $x(1) = 2$. The input function $u(k) = 1, \quad k = 0,1,2,\cdots$

   Solve this problem both analytically and computationally with MATLAB.