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**ECE 479/579 Digital Control Systems**

Homework Assignment #5

4.20 Consider a signal with the transform (which converges for |z|>2)



(a) What value is given by the formula (Final Value Theorem) of (2.100)applied to this U(z)?



(b)Find the final value of u(k) by taking the inverse transform of U(z), using partial-fraction expansion and the tables.





(c)Explain why the two results of (a) and (b) differ.

Because the problem states that |z|>2 for converges, we cannot use the Final Value Theorem which z is 1 in the . The ROC does not include z=1. And in addition we can only use Final Value Theorem where there is an final value exist, since from (b) we can see that u(k)is rising, the final value does not exist.

4.22 Compute the inverse transform  for each of the following transforms:

(a)



(b) 



(c) 



(d) 



4.24 Use the z-transform to solve the difference equation







