Problem statement (experiment 1):

June 7, 2020

Previously we have learnt how to represent any system in the terms of transfer function or impulse response so here we will not dive in to it. Here we have provided with the transfer function and you have to derive its equivalent discrete transfer function and need to analyse it in octave by completing following tasks.
Given transfer function is:

$$T.F = \frac{S+1}{S^2 + 2 * S + 30}$$

Tasks:

1. Convert the s-domain transfer function to discrete transfer function with sampling time interval 0.01s.
2. Convert the same transfer function in z-domain transfer function with different sampling transfer function (e.g. 0.1s, 0.5s etc.)
3. Derive the poles and zeros of all transfer function in octave.
4. Observe change of position of pole w.r.t. sampling frequency in z-plane.
5. State about their stability in z-domain for all transfer function.