Notes: 1. You are allowed one 8 1/2 x 11 sheet of notes and Z-transform tables.
2. Show work for partial credit.

Find \( \frac{C(z)}{R(z)} \) using signal flow graph.

Let \( G(z) = K \frac{z}{(z-1)(z-0.6065)} \)

(a) Find the value of \( K \) for \( e_{ss} \) to unit ramp input to be \( \leq 0.25 \)
(b) For the value of \( K \) found in part (a), find \( T \), \( w_n \), and \( \zeta \) of the system shown in Figure 2.
(c) Find the value of \( K \) for stability. Also find the frequency of oscillation.
3(a) (8 pts)

Map the poles given in the s-plane to the z-plane for $T = 0.1 \pi$ sec

3(b) (9 pts)

Give the approximate transient response to unit step input for each of the z-plane poles.