EE 475 Quiz 07

Name: Sol

1. For a unity feedback control system with open loop transfer function $G_o(s)$ and only a reference input r(s),

   a. the position error constant Kp= $\lim_{s\to 0} G_o(s)$, $G_o(0)$,

   b. the velocity error constant Kv= $\lim_{s\to 0} sG_o(s)$, $sG_o(s)\big|_{s=0}$

   c. the acceleration error constant Ka= $\lim_{s\to 0} s^2G_o(s)$, $s^2G_o(s)\big|_{s=0}$

   d. the ess due to a step r(s) is $e_{ss2step}$= $1/(1+K_p)$,

   e. the ess due to a ramp r(s) is $e_{ss2ramp}$= $1/K_v$,

   f. the ess due to an acceleration r(s) is e_{ss2acc}= $1/K_a$.

   g. If system type = 1, $e_{ss2step}$= 0, and e_{ss2acc}= ∞.

2. In the regular case of using the Routh criteria, we can make two statements after the table is constructed. The two statements are: no sign change in 1st col.

   a. The characteristic polynomial is A.S. if 1st col have the same sig

   b. The number of sign changes in the 1st col = # poles in RHP.