ECE 365/460 HW 10

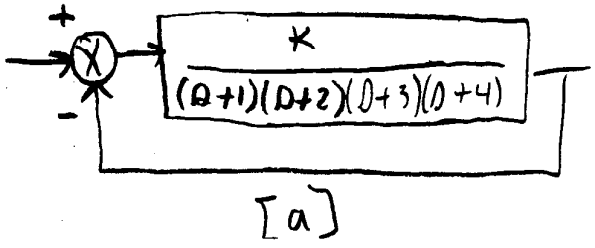
8-18 Sketch the locus for the unity FB system with

$$G(s) = \frac{K(s-1)(s-2)}{s(s+1)}$$

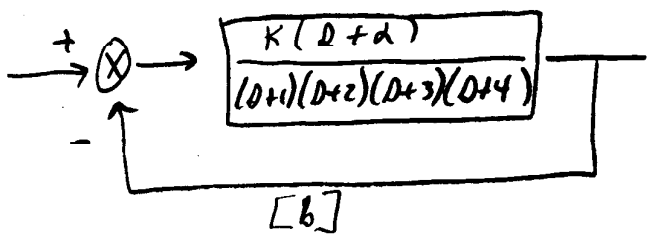
a) Calculate break-in & break-away points
b) Find the jw axis crossing(s)
c) Find the range of K for stability
d) Find the value of K that yields 2nd order complex poles with a damping ratio of 0.5.

8-19 For the system in [a], sketch the locus & find
a) Asymptotes b) Break-away points
c) The range of K for stability
d) The value of K to yield $\zeta = 0.7$

To improve stability, we desire the locus to cross the jw axis at $j5.5$. We add a zero to the system as shown in [b]. Find:
e) The value of α & sketch the locus
f) Repeat part (c)
g) Compare (c) & (f). What transient improvement do you notice?



[a]



[b]