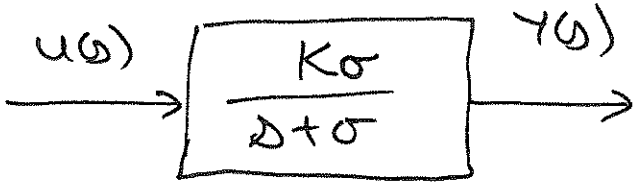
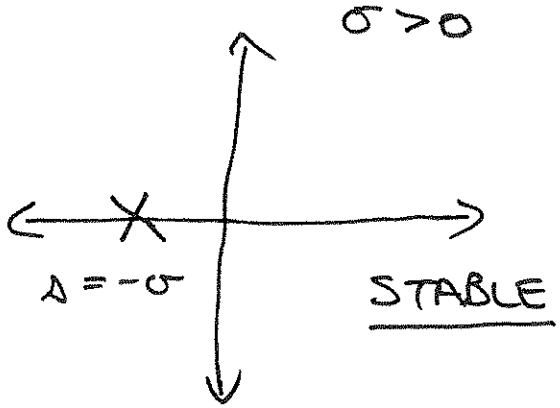
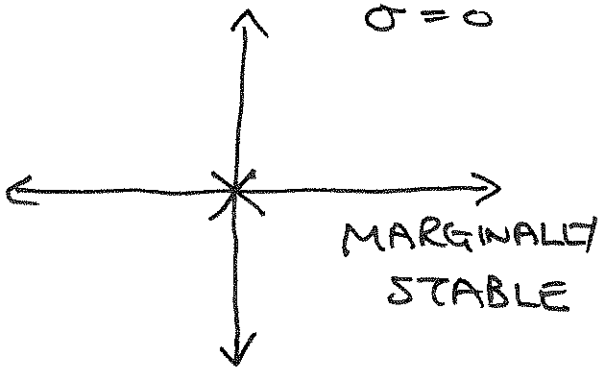
FIRST ORDER SYSTEM

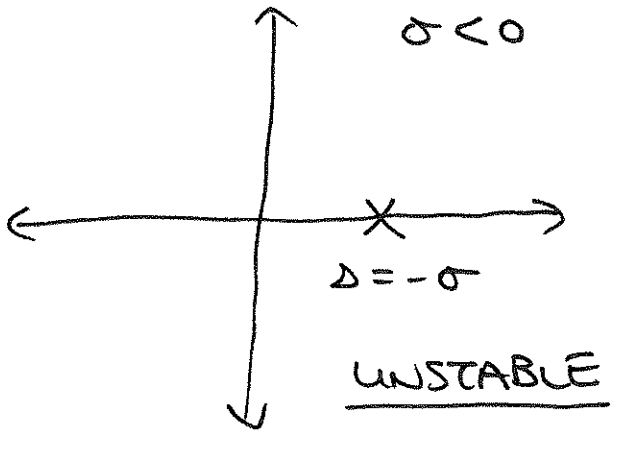


POLE AT $s = -\sigma$

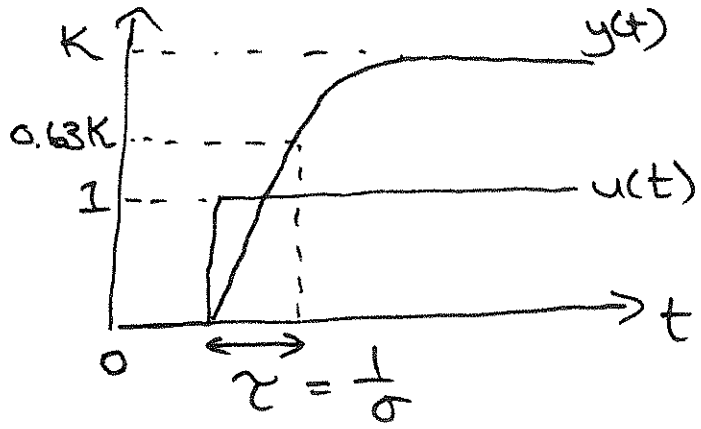
POLE-ZERO PLOT

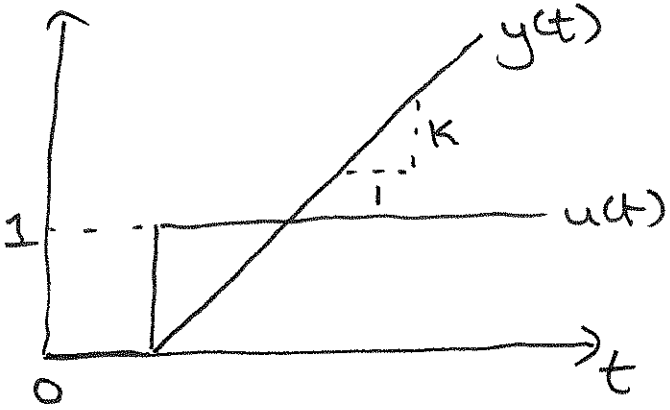


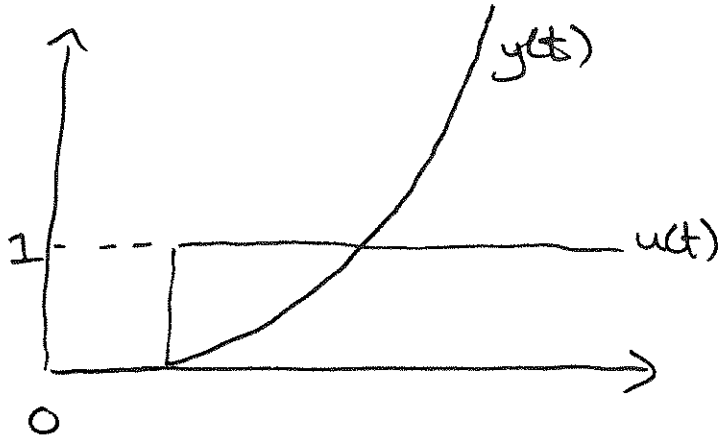




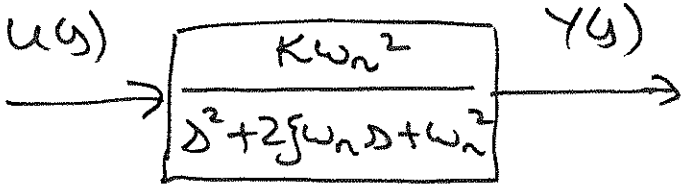
STEP RESPONSE



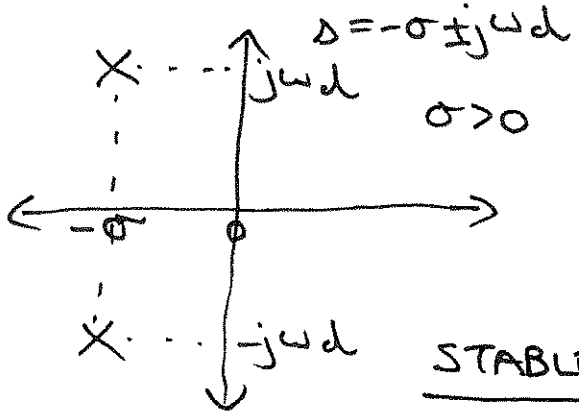




SECOND ORDER SYSTEM (UNDERDAMPED)

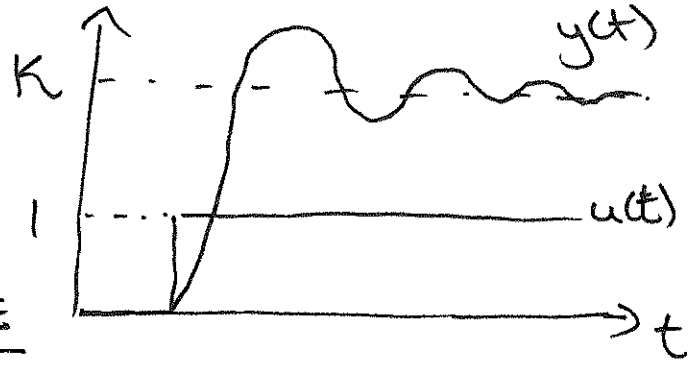


POLE-ZERO PLOT

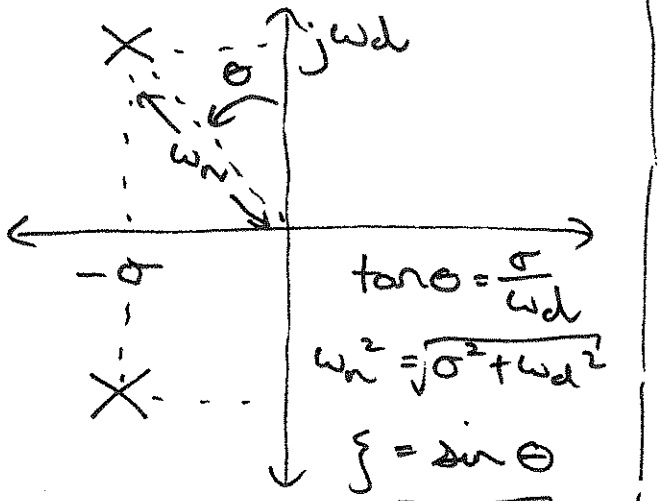


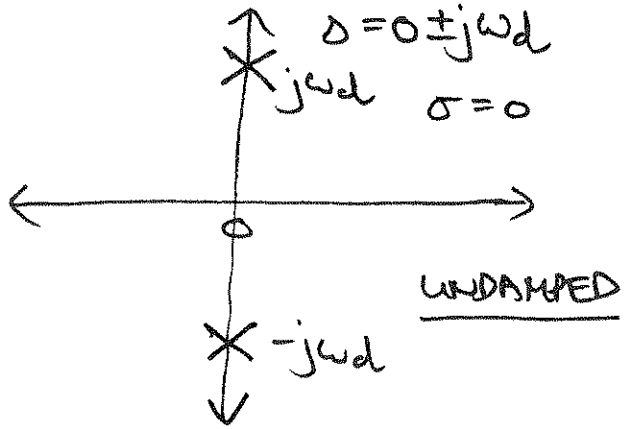
STABLE

STEP RESPONSE

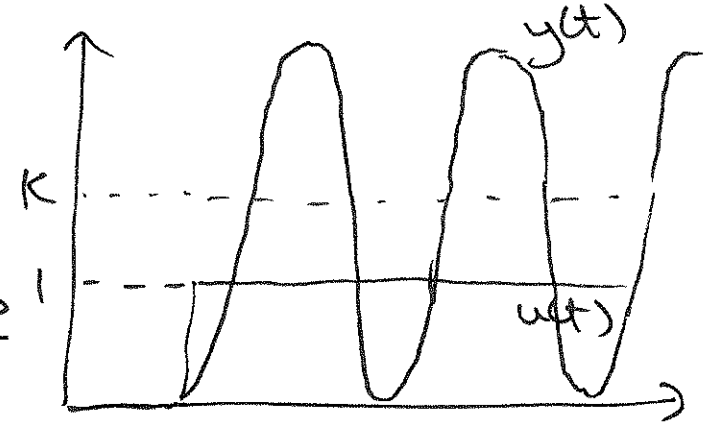


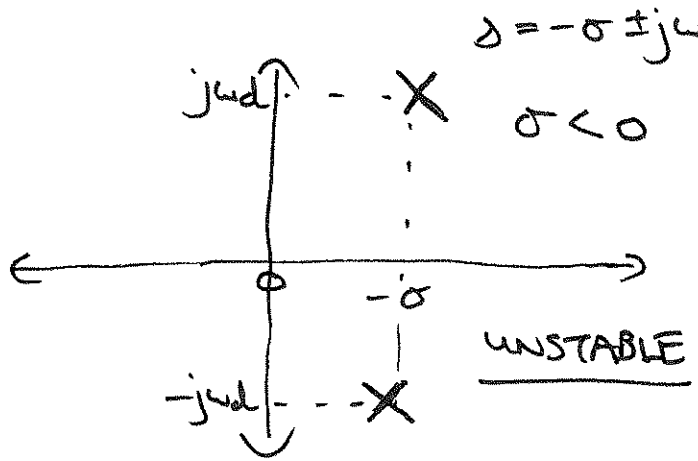
UNDERDAMPED CASE



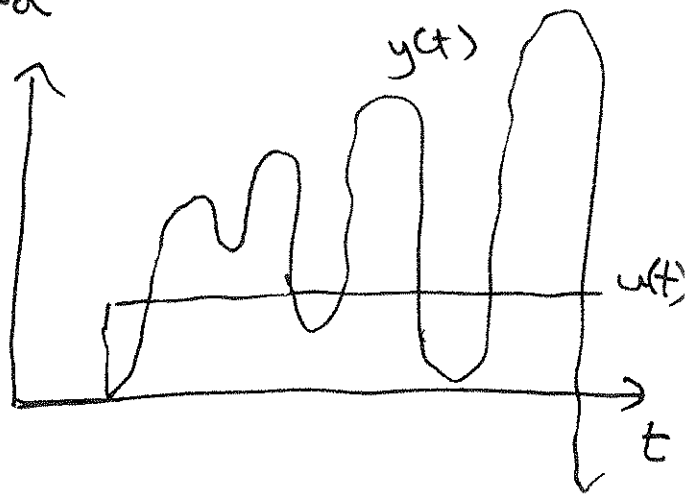


UNDAMPED

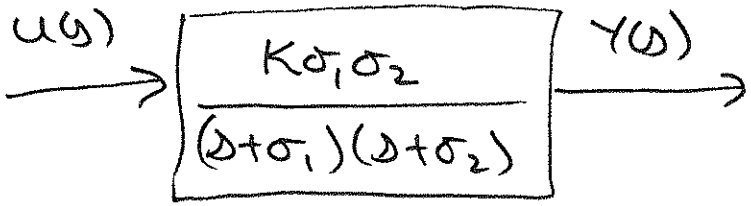




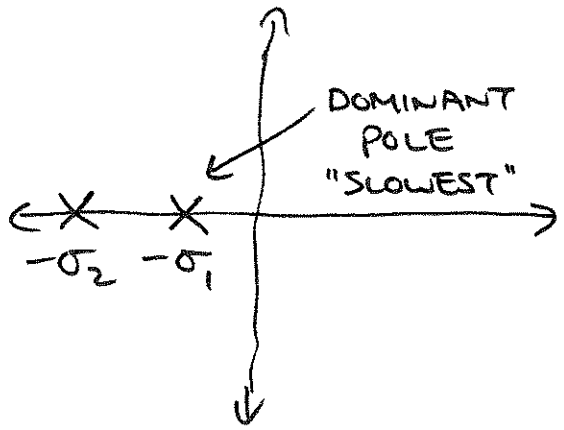
UNSTABLE



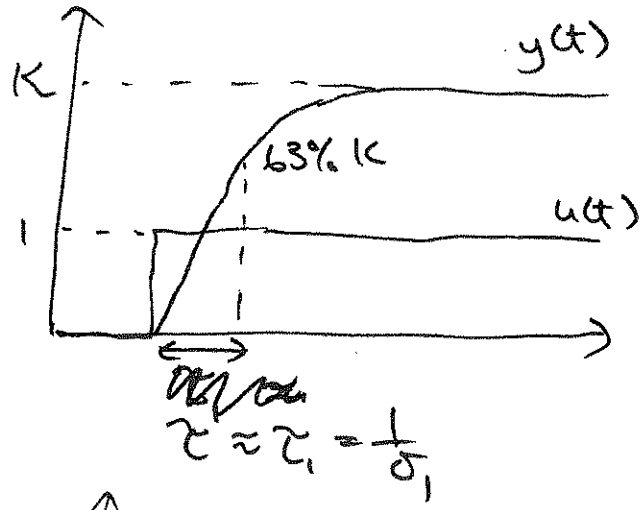
SECOND ORDER SYSTEM
(OVERDAMPED)



POLE-ZERO PLOT

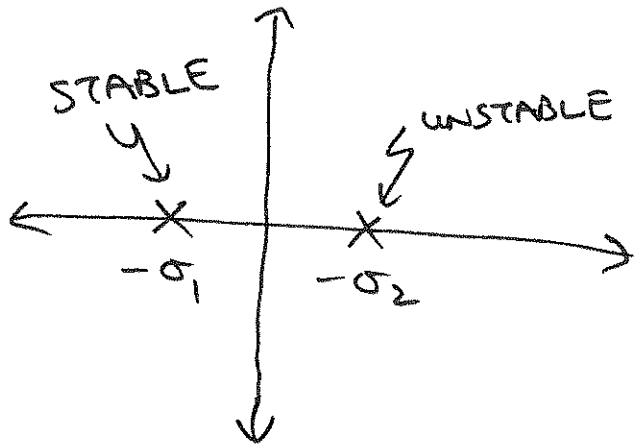


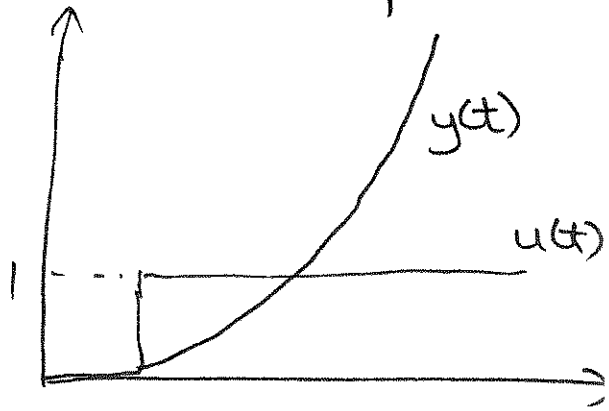
STEP RESPONSE

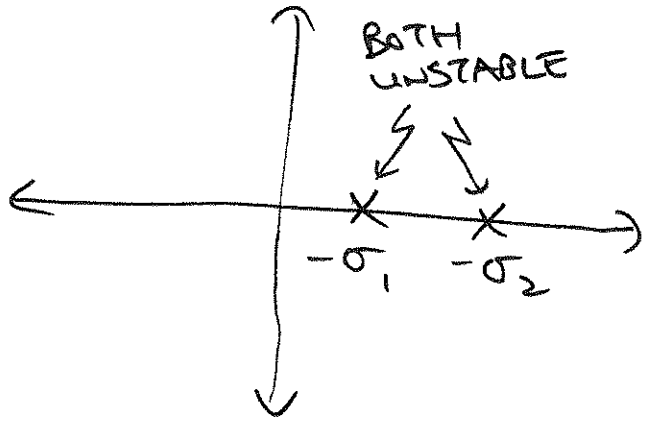


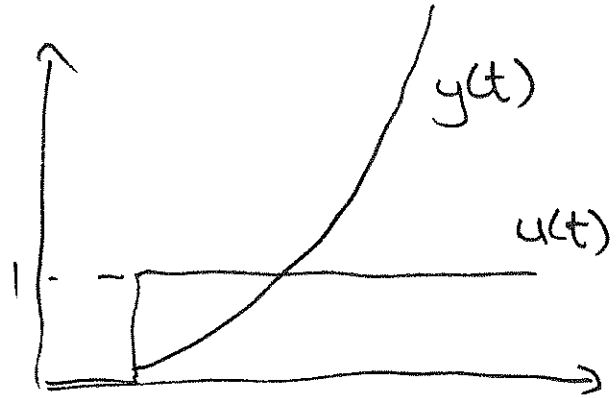
OVERDAMPED

CASE

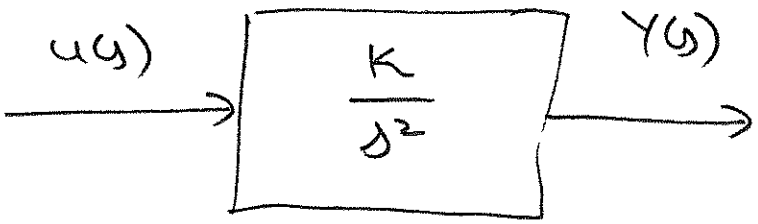


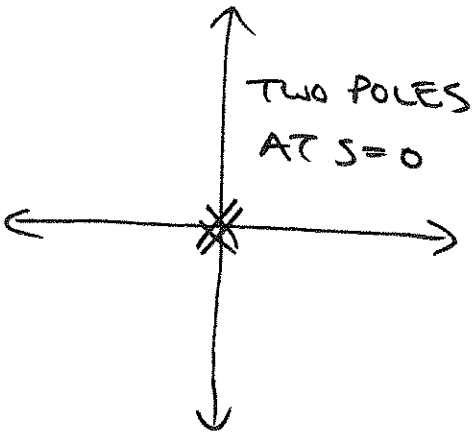


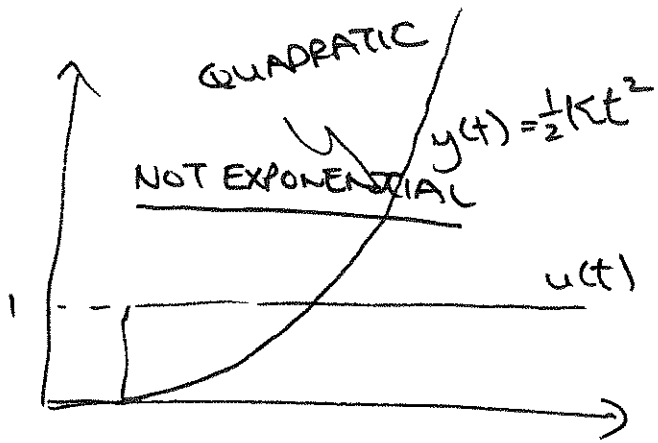




DOUBLE INTEGRATOR







$$\ddot{y}(t) = K u(t)$$