

303H Fall 2011 – Midterm Exam Add On

Due at the start of class Tu 11/08/11

Open book open notes but not open colleagues. Your signature guarantees that the work is totally your own. 30 points

For the following circuit the op-amp is assumed to operate linearly with zero input

currents and a second order (in s) gain $k(s) = \frac{k_{\infty} \sigma_1 \sigma_2}{(s + \sigma_1)(s + \sigma_2)}$, $V_o = k(s)V_d$. Here

k_{∞} , σ_1 , σ_2 are positive (real) constants with $\sigma_1 < \sigma_2$.

- Find the input admittance, $y(s) = I/V$, in terms of C , $G_1=1/R_1$, $G_2=1/R_2$, and $k(s)$.
- Give the zeros and poles and sketch their positions in the s -plane.
- Let $k_{\infty} = \infty$ and give y . Comment on the stability of the result.

