3) phase diagram passes $-180°$ @ approximately 10Ω or 14 rad/s.

the amplitude is close to 20, $20-3=17$.

increasing this by a gain of 1.5 is a $20\log(1.5)$ dB
$= 3.5$ dB

will RAISE the amplitude graph and the point is still >0 dB

so unstable

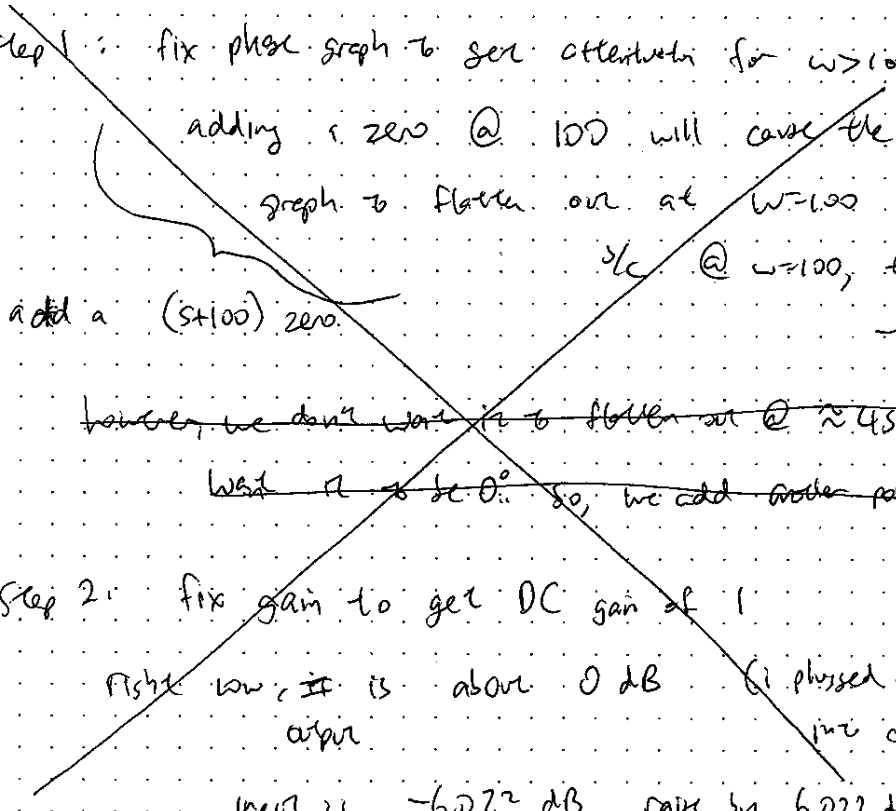
#4) step 1: fix phase graph to get attenuation for $\omega > 100$

adding a zero @ 100 will cause the graph to flatten out at $\omega = 100$

add a $(s+100)$ zero.

s/c @ $\omega = 100$, the slope is $-45°$/dec.

~~however, we don't want it to flatten out @ $\approx 45°$. we want it to be $0°$. so, we add another pole~~



step 2: fix gain to get DC gain of 1

right now, it is above 0 dB (I plugged in $\omega = 100000$ into calc !!)

gain is -6.022 dB. raise by 6.022 dB