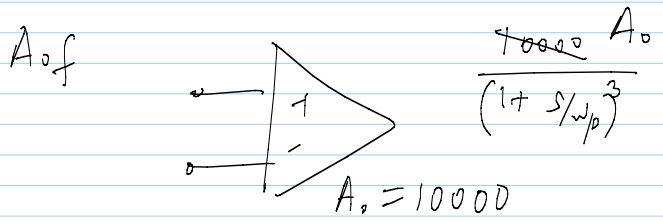


20/8/14

lec12

Moodle message about Tutorial has been sent a couple of days ago.
Class website: http://www.ee.iitm.ac.in/vlsi/courses/ee3002_2014/start
Tutorial due tomorrow 20/8/2014 (Thursday); doubts will be discussed in class
Quiz 1 will be held on 21/8/2014 (Friday)



$CLG = 2 \Rightarrow f = 1/2$

$= 10 \Rightarrow f = 0.1$

$A_0 f = 8$

$$LG(s) = \frac{A_0 f}{D(s)}$$

Instability occurs when $A_0 f$ is large

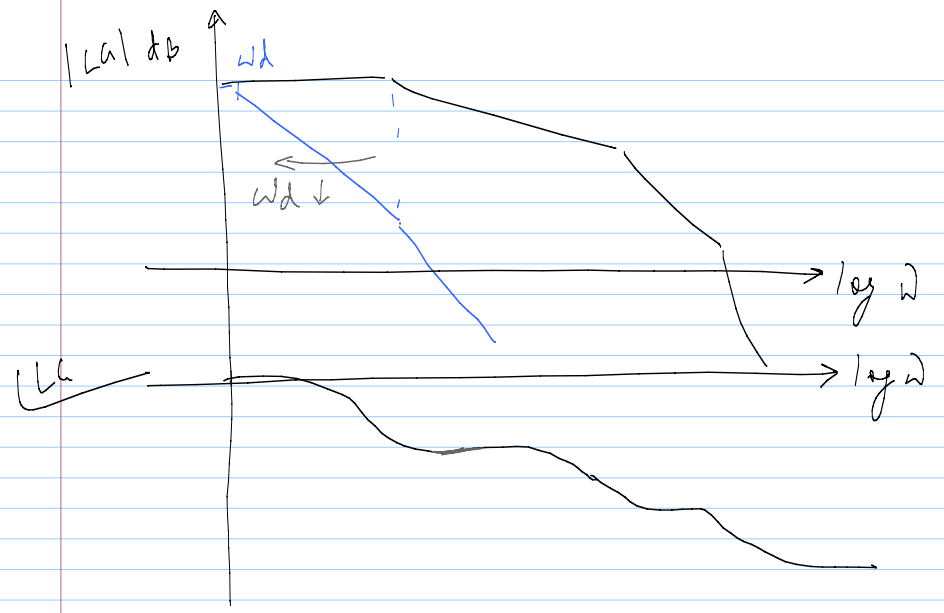
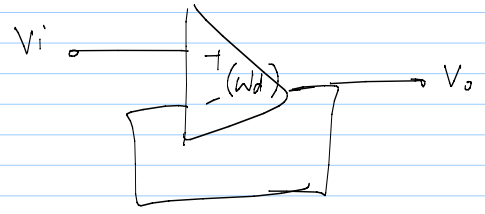
$\Rightarrow f$ is large $\Rightarrow f=1$ is worst-case

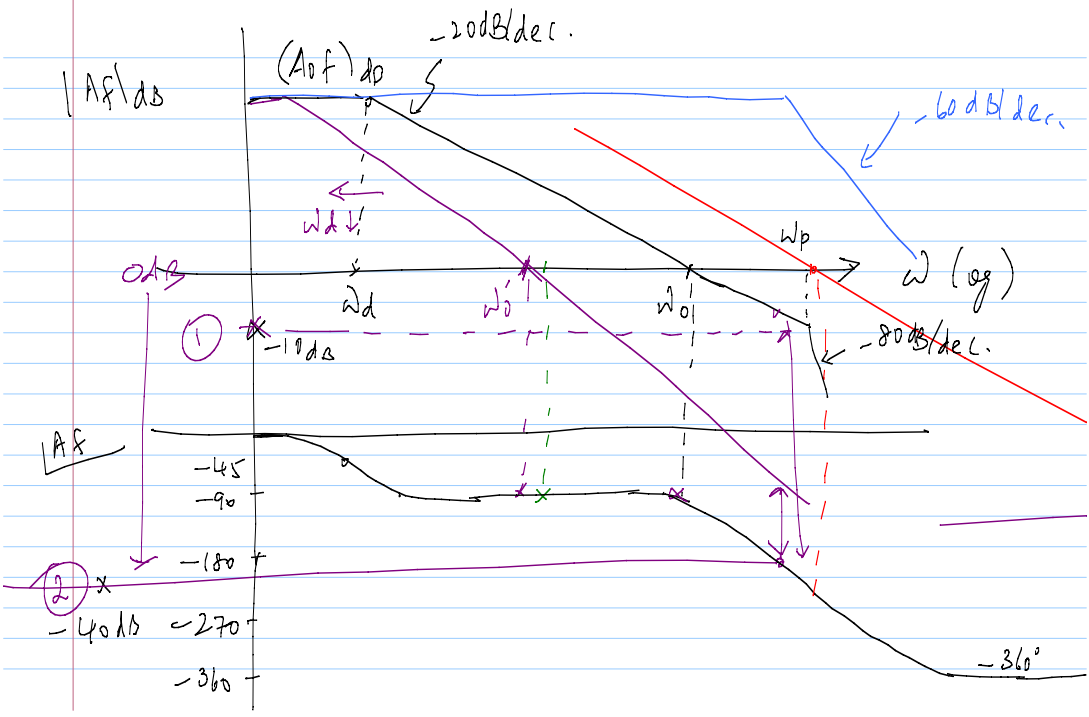
$$f=1 \Rightarrow \frac{A_0}{D(s)} \times \frac{1}{(1 + s/w_d)}$$

$$f=1/2 \Rightarrow \frac{A_0 \cdot 1/2}{D(s) \cdot (1 + s/w_d)}$$

* General-purpose opamps - very often compensated for "unity gain"

$CLG @ f=1 = 1$





1) Gain margin
 $= 0 dB - |L_h(j\omega)|_{\angle L_h(j\omega) = -180^\circ}$

larger gain margin is better

2) Phase margin
 $= \angle L_h(j\omega) \Big|_{|L_h(j\omega)| = 0 dB} - (-180^\circ)$
 $= 180^\circ + \angle L_h(j\omega) \Big|_{|L_h(j\omega)| = 0 dB}$

