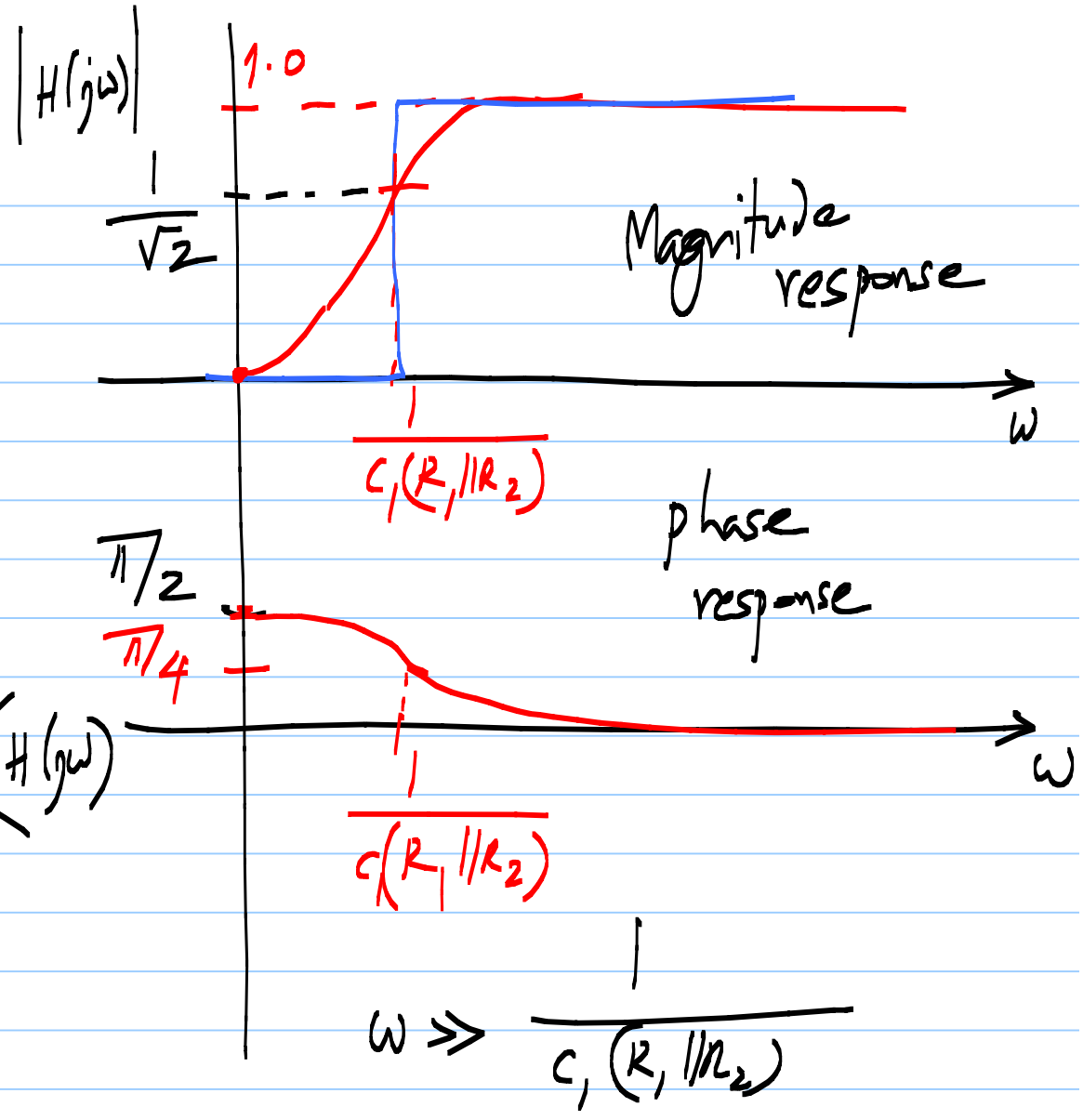
$$H(j\omega) = \frac{j\omega C_1 (R_1 \| R_2)}{1 + j\omega C_1 (R_1 \| R_2)}$$

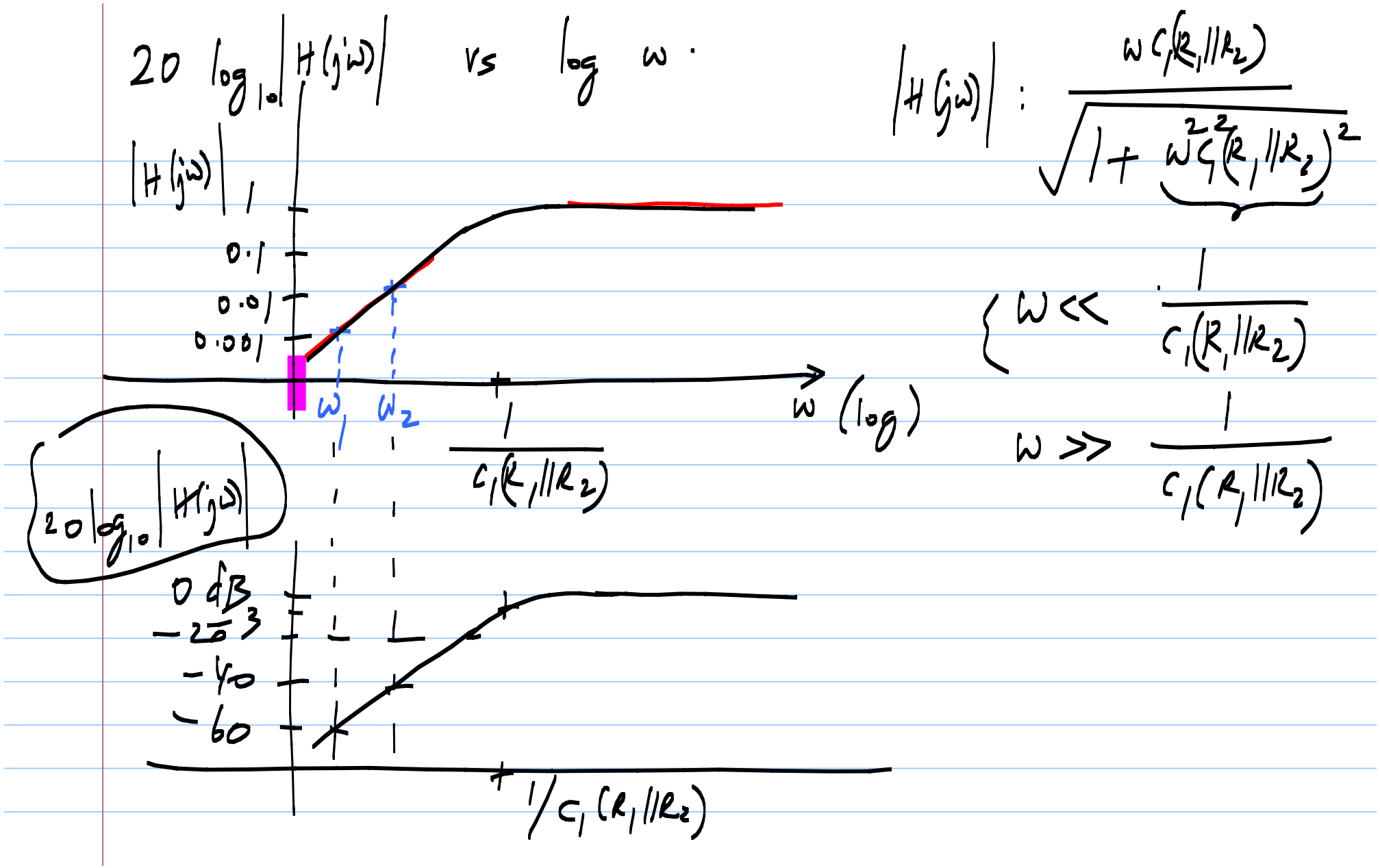
$$\frac{j1}{1 + j1}$$

$$\frac{V_{os}(j\omega)}{V_s(j\omega)}$$

$\not\angle H(j\omega)$

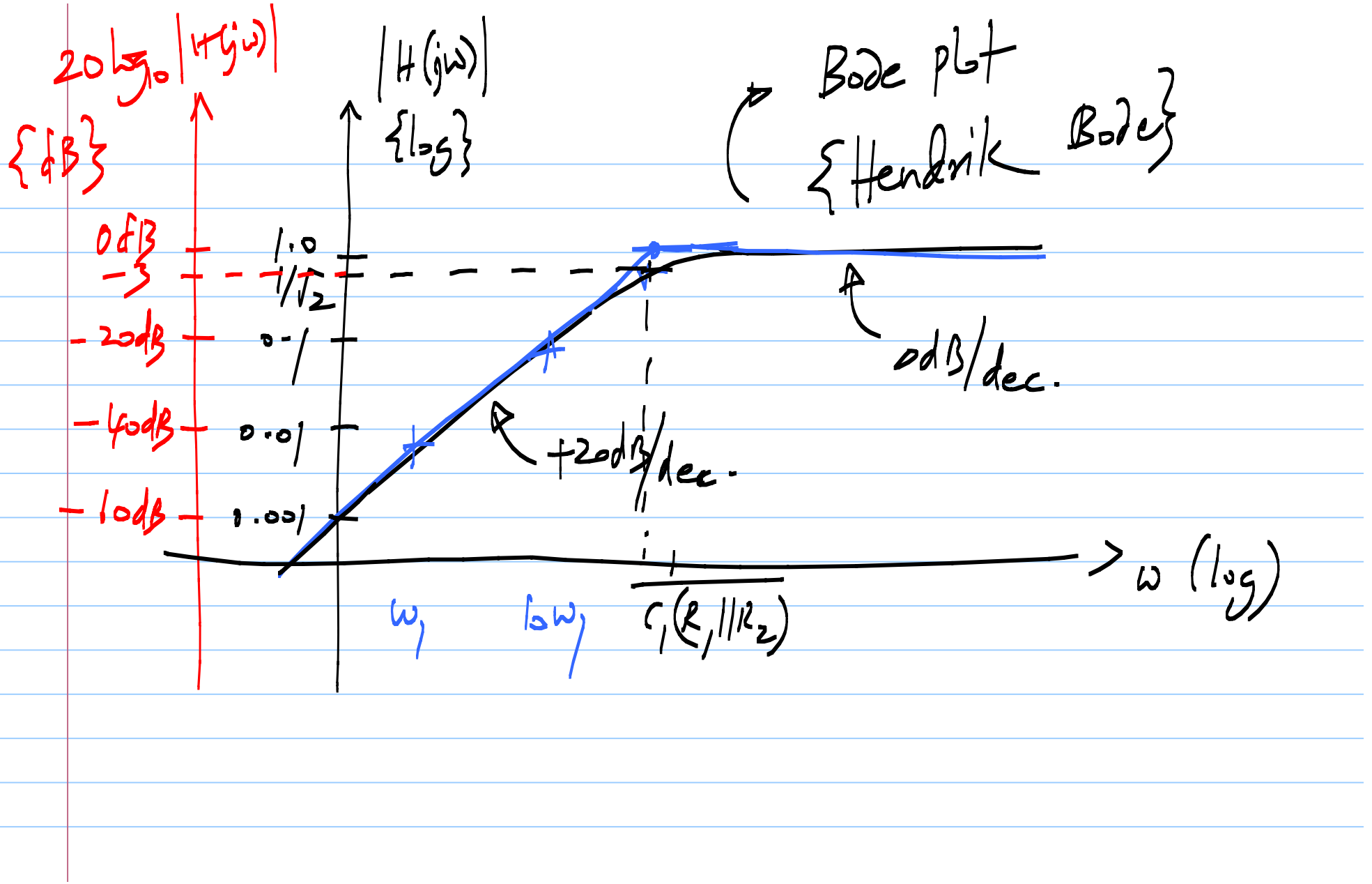


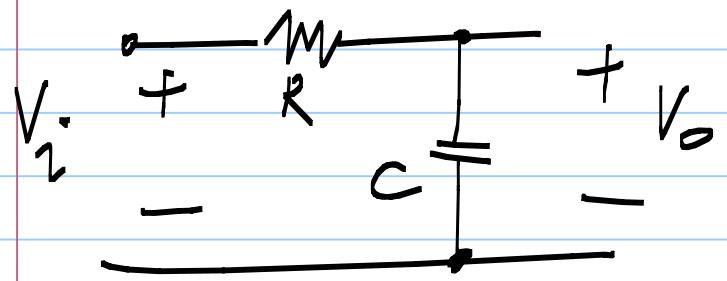
$$\omega \gg \frac{1}{C_1 (R_1 \| R_2)}$$



$$|H(j\omega)| : \frac{\omega C_1(R_1 \| R_2)}{\sqrt{1 + \omega^2 C_1^2 (R_1 \| R_2)^2}}$$

$$\begin{cases} \omega \ll \dfrac{1}{C_1(R_1 \| R_2)} \\ \omega \gg \dfrac{1}{C_1(R_1 \| R_2)} \end{cases}$$


$20\log_{10}|H(j\omega)|$
{dB}
$|H(j\omega)|$
{log}
Bode plot
{Hendrik Bode}
0dB
-3
-20dB
-40dB
-10dB
1.0
$1/\sqrt{2}$
0.1
0.01
0.001
+20dB/dec.
0dB/dec.
ω_1
$10\omega_1$
$\frac{1}{C_1(R_1 \| R_2)}$
ω (log)



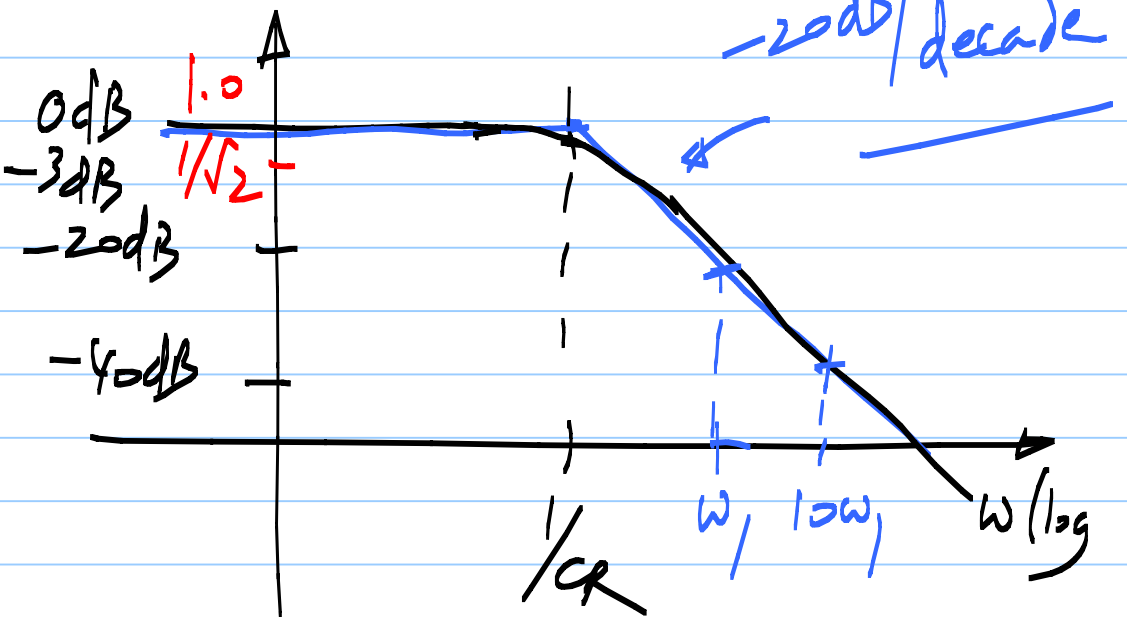
$$H(s) = \frac{V_o(s)}{V_i(s)} = \frac{1}{1+sCR}$$

$$|H(j\omega)| = \frac{1}{\sqrt{1+\omega^2C^2R^2}}$$

$$\simeq 1 \qquad \omega \ll \frac{1}{CR}$$

$$\simeq \frac{1}{\omega CR} \qquad \omega \gg \frac{1}{CR}$$

$|H(j\omega)|$ vs $\log(\omega)$



$$p_1 < p_2 < z_1$$

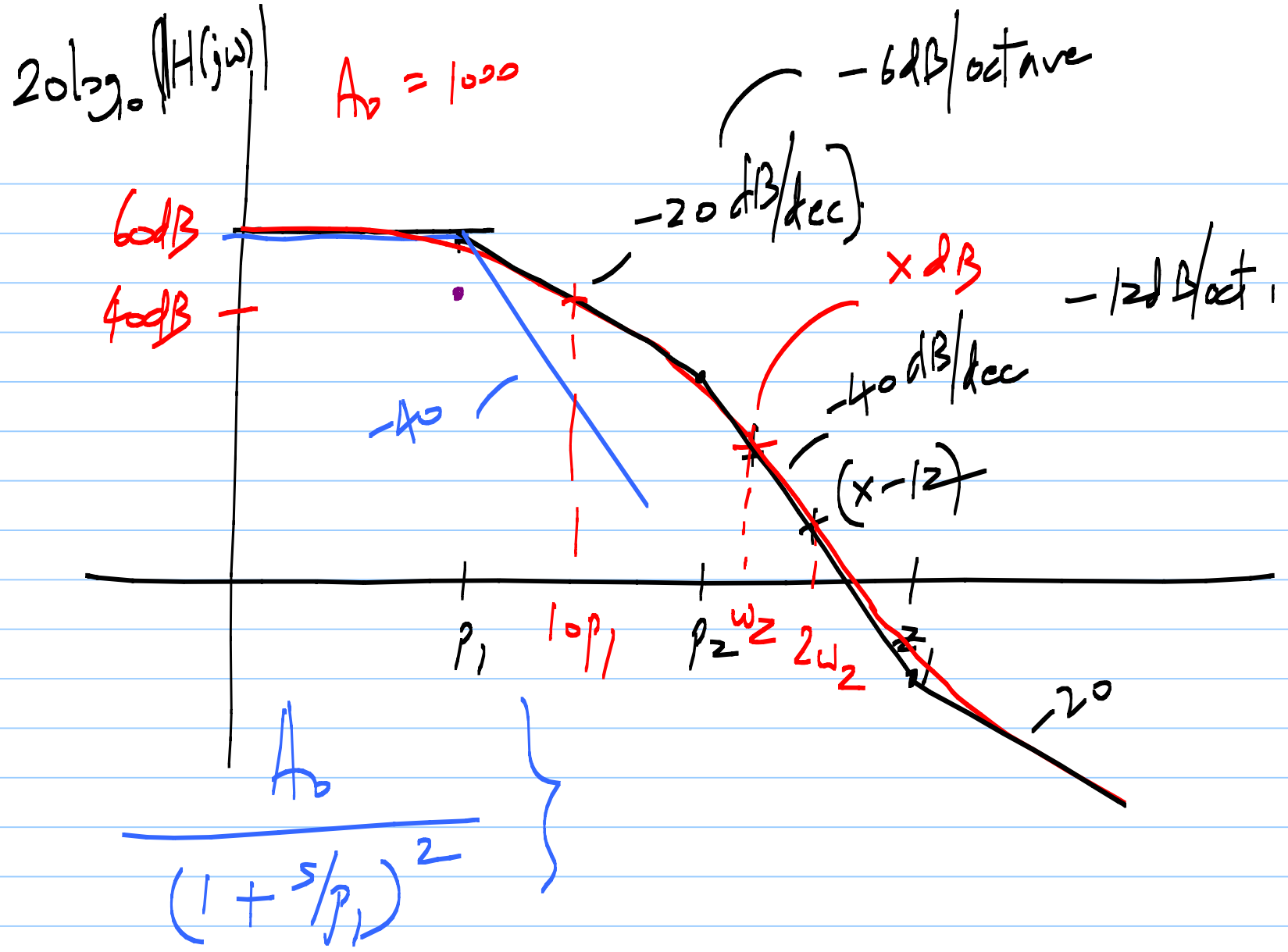
$$20\log_{10}\left(\frac{1}{\omega CR}\right) = -20\left[\log_{10}(CR) + \log_{10}(\omega)\right]$$

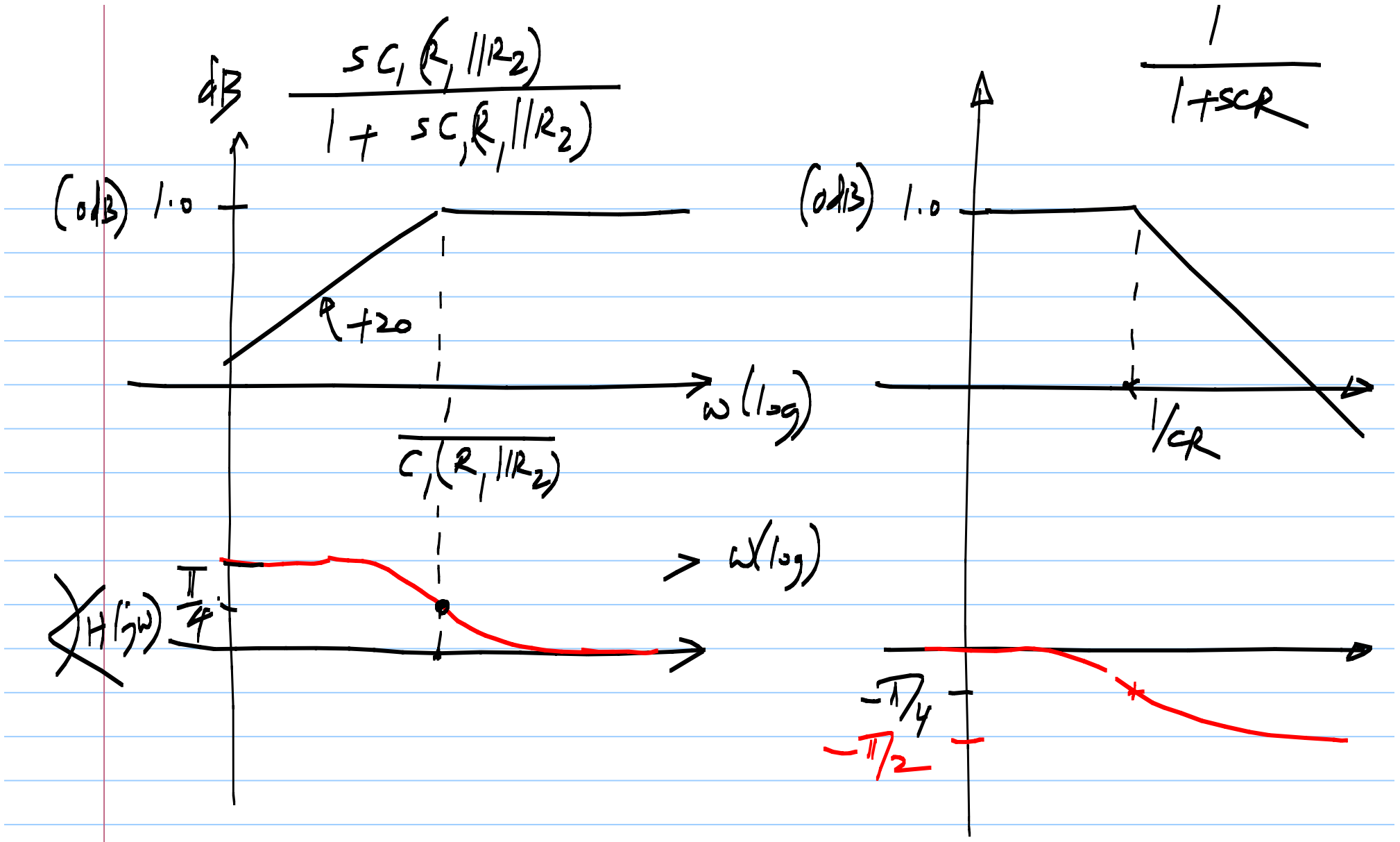
$$H(j\omega) = A_0 \frac{\left(1 + j\omega/z_1\right)}{\left(1 + \frac{j\omega}{p_1}\right)\left(1 + \frac{j\omega}{p_2}\right)}$$

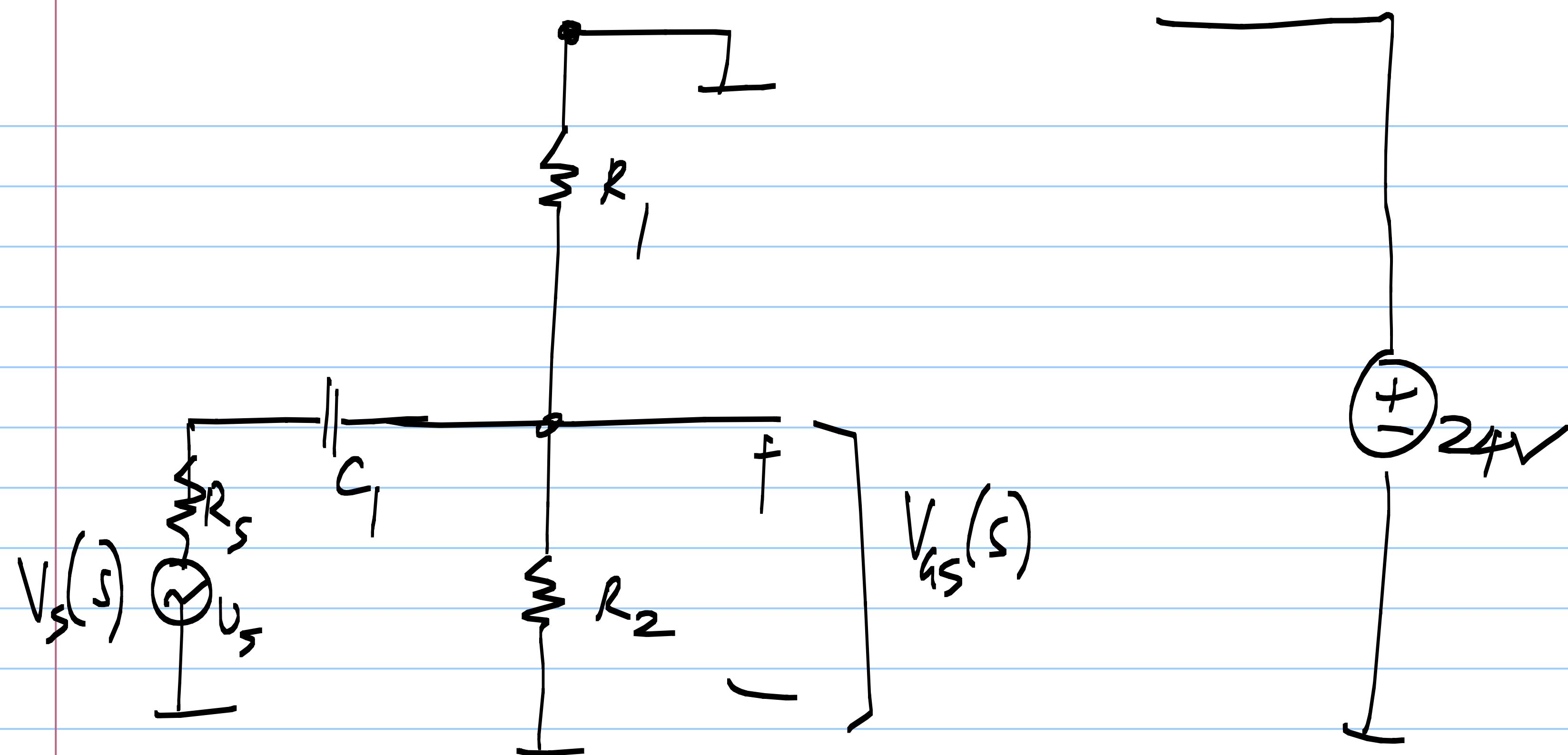
$|H(j\omega)|$

$\omega \ll p_1$ $\quad A_0$ $\quad p_2 \ll \omega \ll z_1$ $\quad A \frac{p_1 p_2}{\omega^2}$

$p_1 \ll \omega \ll p_2$ $\quad A_0 \cdot \frac{p_1}{\omega}$ $\quad z_1 \ll \omega$ $\quad A_0 \frac{p_1 p_2}{z_1} \cdot \frac{1}{\omega}$


$20\log_{10}|H(j\omega)|$
$A_0 = 1000$
60dB
40dB
-60dB/octave
-20 dB/dec
x dB
-12 dB/oct.
-40 dB/dec
(x-12)
-40
p_1
$10p_1$
p_2
ω_z
$2\omega_z$
z_1
-20
$\frac{A_0}{(1+s/p_1)^2}$


dB
$\frac{sC_1(R_1 \| R_2)}{1 + sC_1(R_1 \| R_2)}$
(0dB) 1.0
+20
ω (log)
$\frac{1}{C_1(R_1 \| R_2)}$
$\angle H(j\omega)$
$\frac{\pi}{4}$
ω (log)
$\frac{1}{1+sCR}$
(0dB) 1.0
$\frac{1}{CR}$
$-\pi/4$
$-\pi/2$



Calculate $V_{gs}(s)$.

Conditions for getting $v_{gs} \simeq v_s$