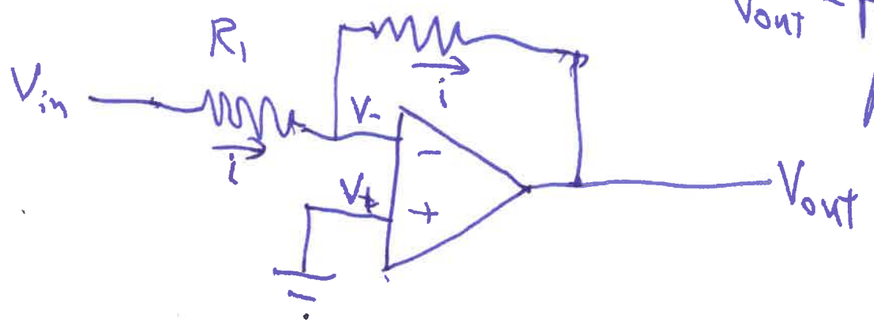
Thu 19 Jan 17

(1)

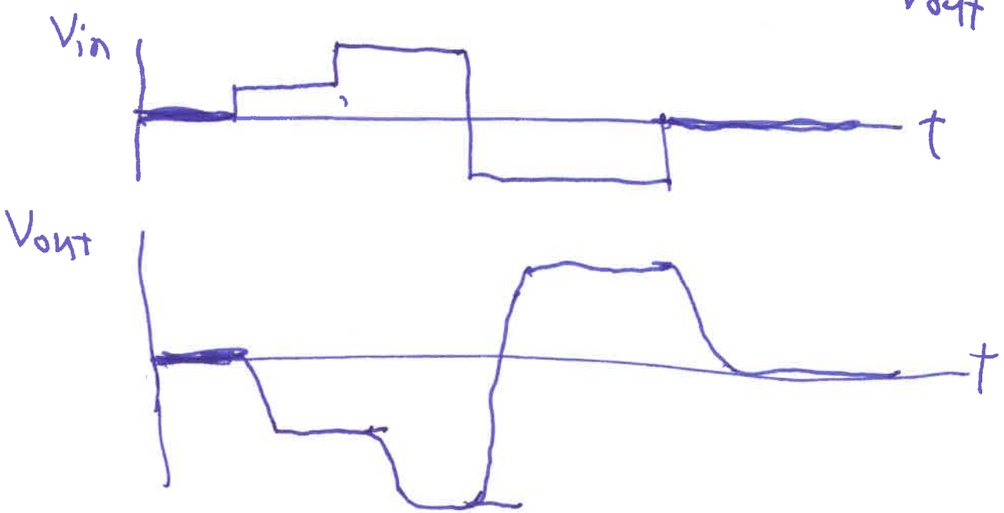
$$V_{out} = A_{OC}(V_+ - V_-)$$

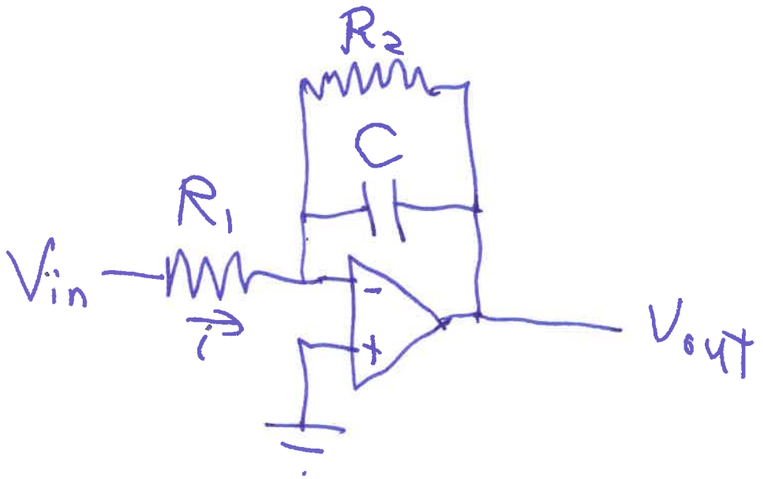
$$A_{OC} \to \infty$$



$$i = \frac{V_{in} - \cancel{V_-}}{R_1} = \frac{\cancel{V_-} - V_{out}}{R_2}$$

$$\frac{V_{out}}{V_{in}} = -\frac{R_2}{R_1}$$

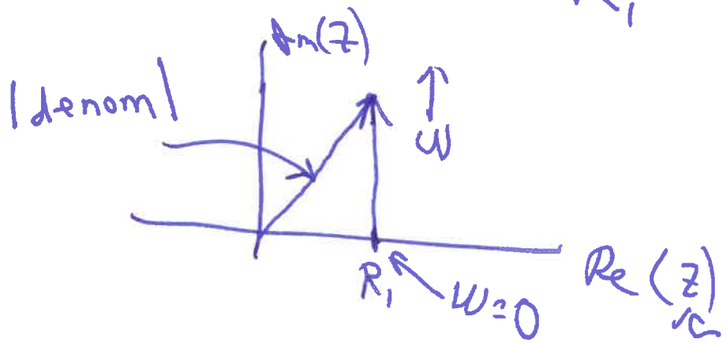




$$i = \frac{V_{in}}{R_1} = \frac{-V_{out}}{R_2 \| \frac{1}{j\omega C}}$$

$$A_v = \frac{V_{out}}{V_{in}} = \frac{-R_2}{R_1 R_2 j\omega C + R_1}$$

$$A_v(0) = -R_2/R_1$$



$W_c \rightarrow$ Power Gain

$= \frac{1}{2}$ max

$|\text{Denominator}| = \sqrt{2}$

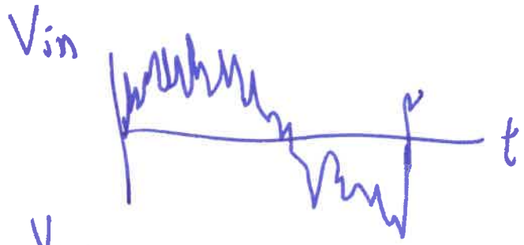
$R_1 R_2 W C = R_1 1$

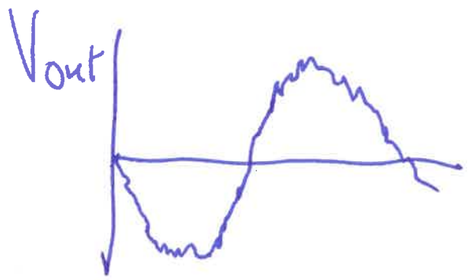
$w_c = \frac{1}{R_2 C}$

$A_v(w_c) = \frac{A_v(0)}{\sqrt{2}}$

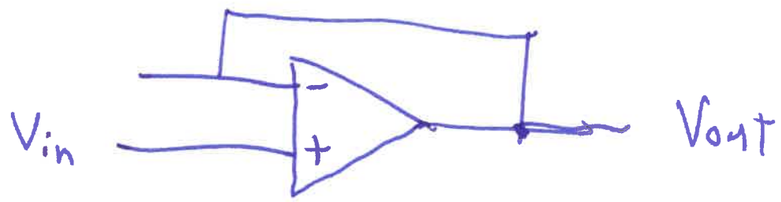
$A_p(w_c) = \frac{A_p(0)}{2}$

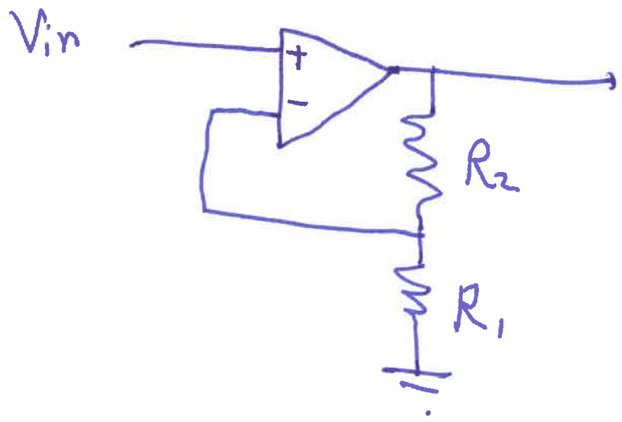
$10 \log A_p(w_c) = 10 \log A_0(0) - 3dB$





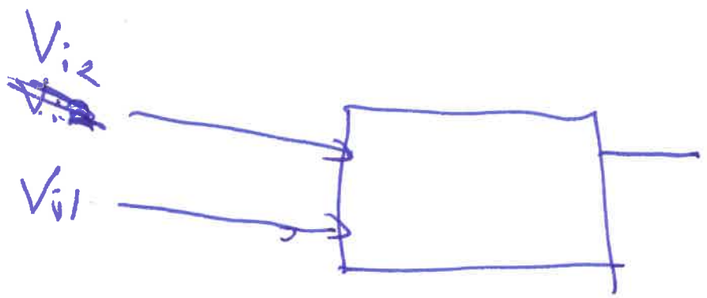
Buffer



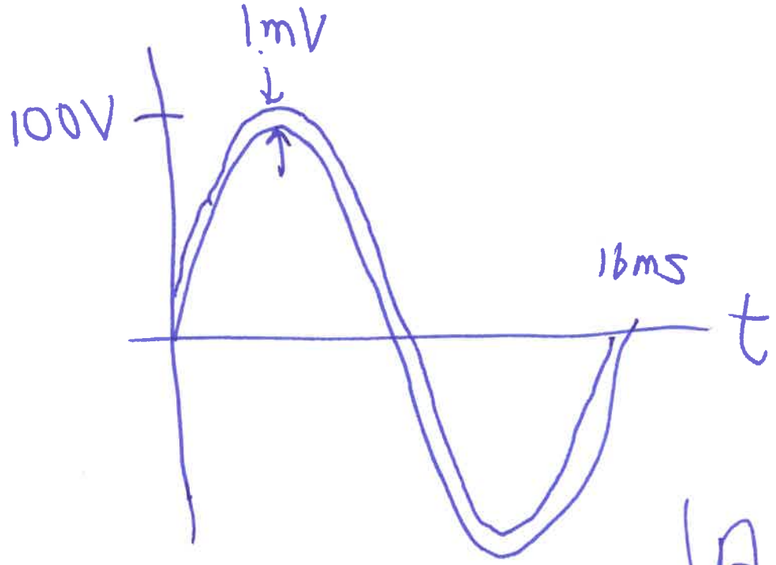


$$A_v = \frac{R_2 + R_1}{R_1}$$

Diff. Amp

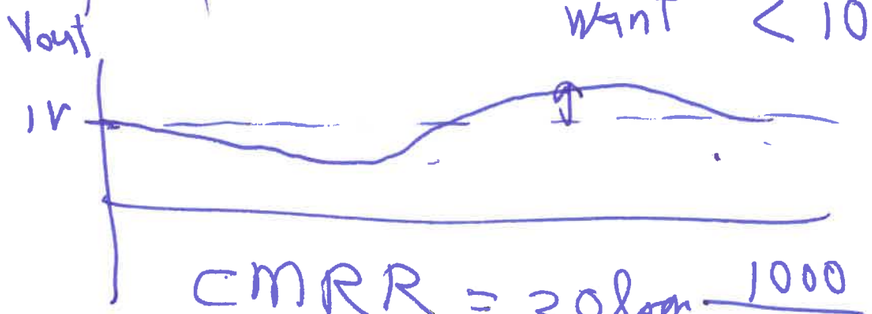


$$V_o = A_D (V_{i2} - V_{i1})$$



$|A_{cm}| < 10^{-4}$

$|A_D| = 1000$



$$CMRR = 20 \log \frac{1000}{10^{-4}} = 140 dB$$