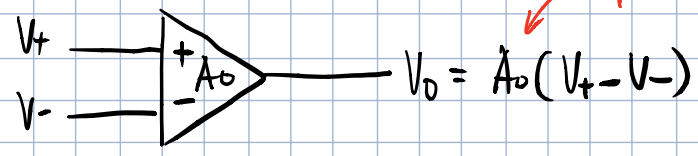
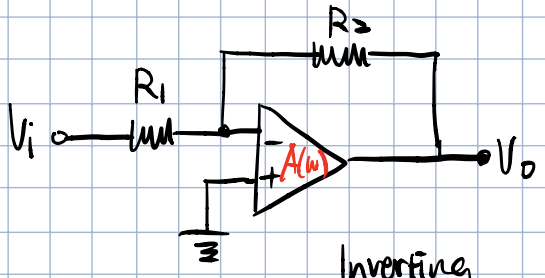
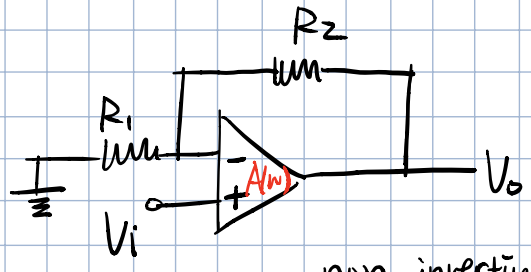
Review Session.

1) Amplifier.





Inverting.



non-inverting.

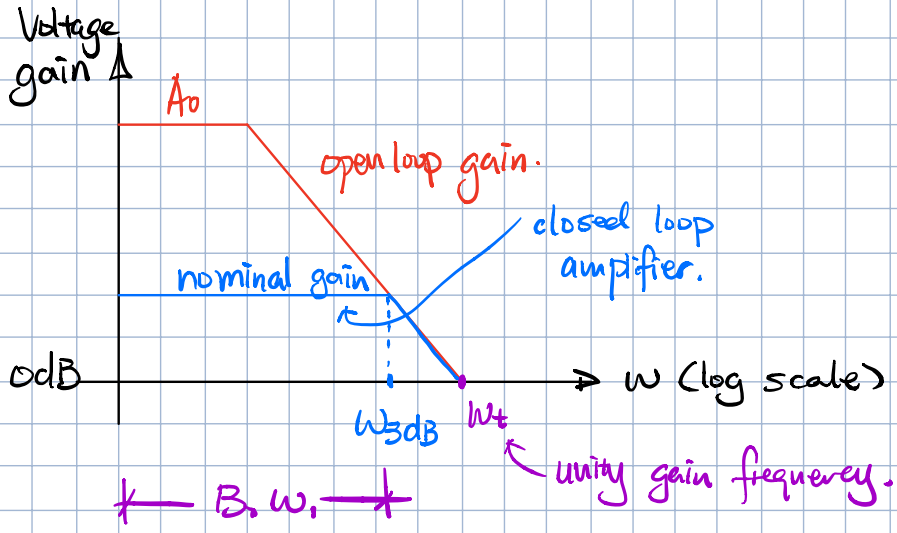
closed loop amplifier.

DC or nominal gain.

$$\frac{V_o}{V_i} = \frac{-R_2/R_1}{1 + jw/w_{3dB}}$$

$$\frac{V_o}{V_i} = \frac{1 + R_2/R_1}{1 + jw/w_{3dB}}$$

3dB frequency



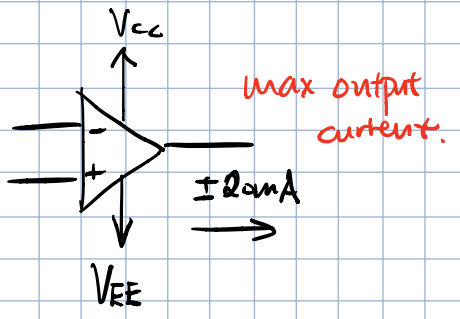
$$w_{3dB} = \frac{w_t}{1 + R_2/R_1}$$

Frequency Bandwidth Product

(nominal gain)(BW) $\doteq w_t$

Op-Amp limitation.

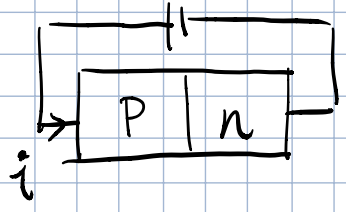
output voltage saturated. $\simeq \pm(V_{cc} - 2V)$

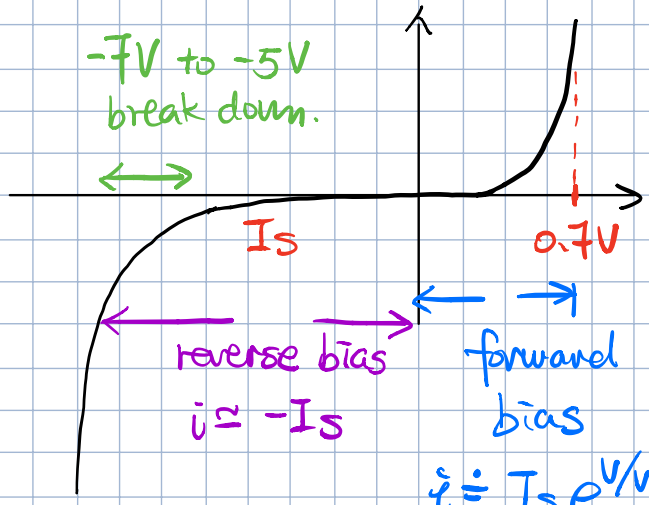


Full power bandwidth: $f_M = \frac{SR}{2\pi V_{o_{max}}}$

- f_M: max frequency of a sinusoidal waveform. allowed w/o SR limiting effect.
- $V_{o_{max}}$: max rated voltage.

2) Diode





$$i \doteq I_S e^{v/V_T}$$

$$V_2 - V_1 = V_T \ln \frac{i_2}{i_1}$$

diode small signal model.