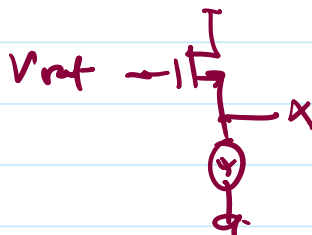
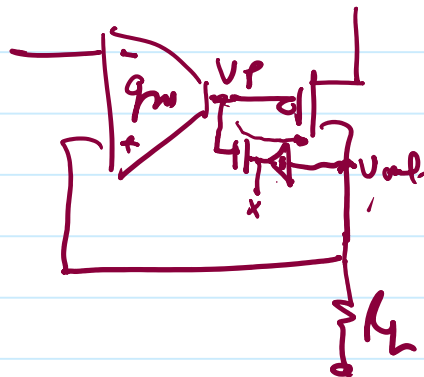
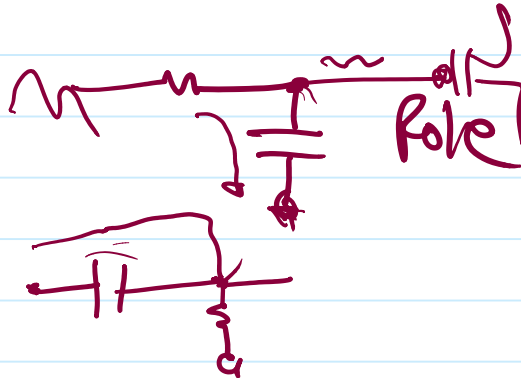
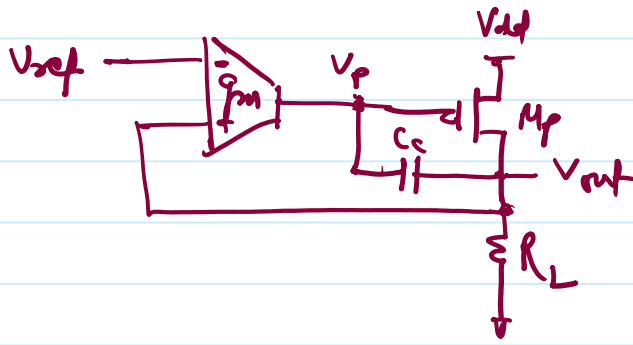
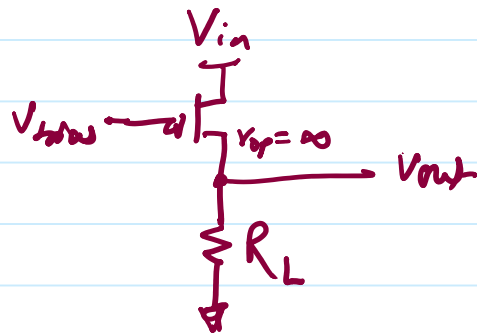


Removing RHP zero

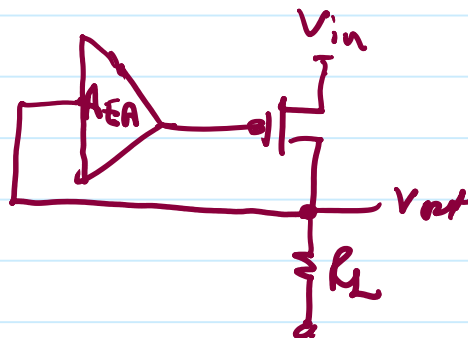


Load Regulation

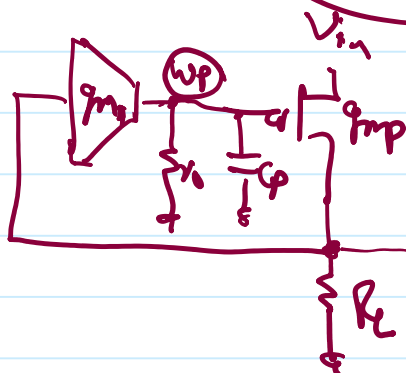
$$\text{Load Regulation} = \frac{\Delta V_{out}}{\Delta I_L} = R_{out}$$



$$R_{out} = R_L$$



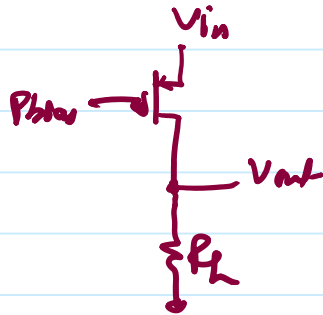
$$R_{out} = \frac{R_L}{1 + A g_m R_L}$$



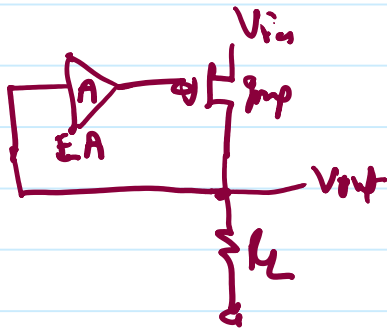
$$R_{out} = \left(\frac{R_L}{1 + g_m r_{ds} g_m R_L} \right) \times \frac{(1 + r_{ds} C_p s)}{(1 + r_{ds} C_p / A s)}$$

Line Regulation

$$\text{Line Regulation} = \frac{\Delta V_{out}}{\Delta V_{in}}$$



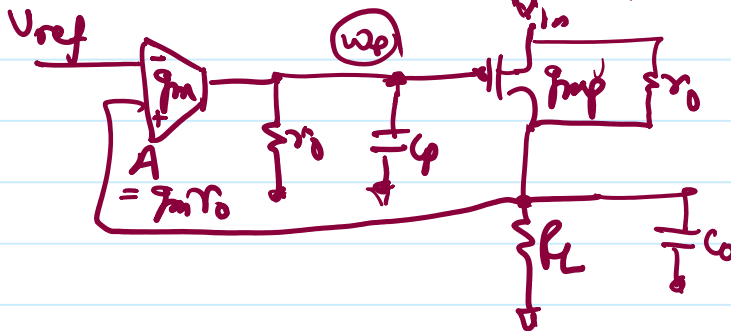
$$\frac{\Delta V_{out}}{\Delta V_{in}} = g_m R_L$$



$$\frac{\Delta V_{out}}{\Delta V_{in}} = \frac{g_m R_L}{1 + A g_m R_L}$$

$$\approx \frac{g_m R_L}{A g_m R_L}$$

$$= \frac{1}{A}$$



$$\frac{\Delta V_{out}}{\Delta V_{in}} = \frac{(1 + C_{rss}) g_m R_L}{(1 + g_m R_L A) (1 + \frac{C_{rss}}{g_m R_L A})}$$

(PSRR)

→ Power Supply Rejection Ratio

