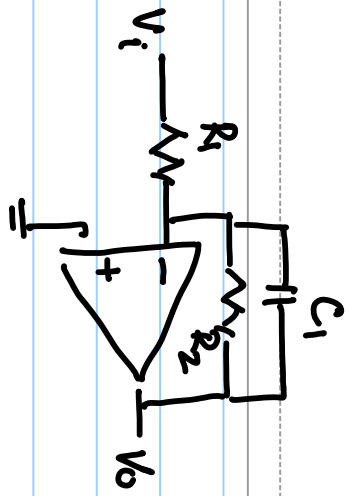
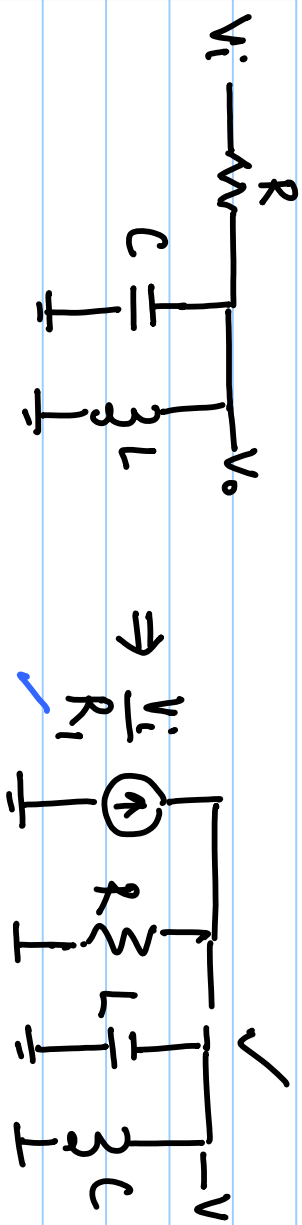


Lecture #31

$$H(s) = \frac{A_0}{1 + s/\omega_p}$$



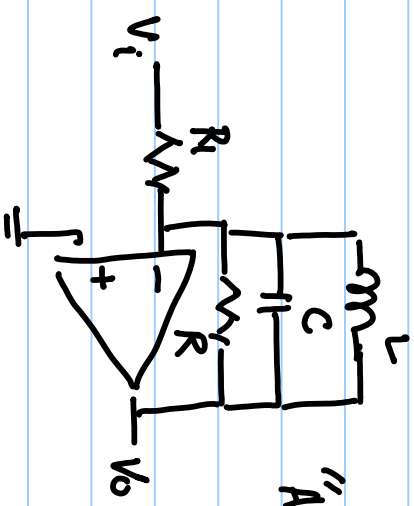
$H(s) =$



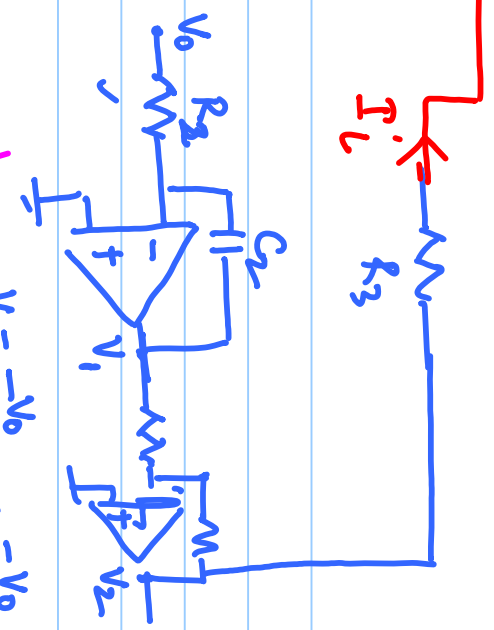
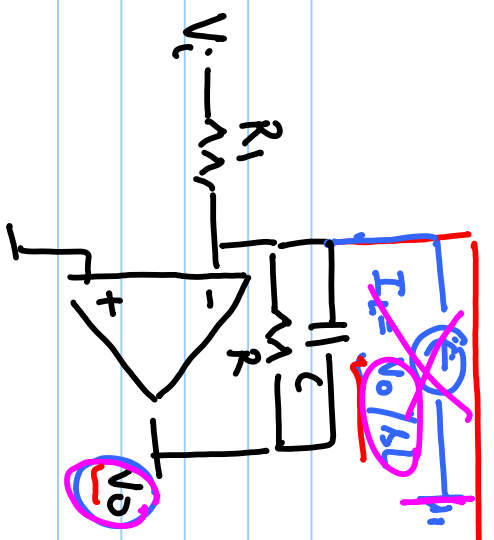
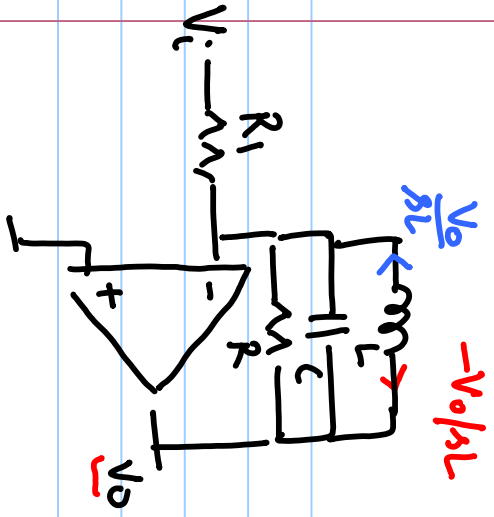
$$\frac{V_o}{V_i} = \frac{(sL \parallel \frac{1}{sC})}{R + (sL \parallel \frac{1}{sC})}$$

$$= \frac{sL / (1 + s^2LC)}{R + \frac{sL}{1 + s^2LC}}$$

$$= \frac{sL/R}{s^2LC + sL + R}$$



"Active RC"



$$I_L = \frac{V_0}{s} \cdot \frac{1}{L}$$

$$V_1 = \frac{-V_0}{sR_2C_2} = \frac{-V_0}{s} \frac{1}{R_2C_2}$$

$$V_2 = + \frac{V_0}{s} \frac{1}{R_2C_2}$$

$$I_L' = \frac{V_2}{R_3} = \frac{V_0}{s} \frac{1}{R_3} \frac{1}{R_2C_2}$$

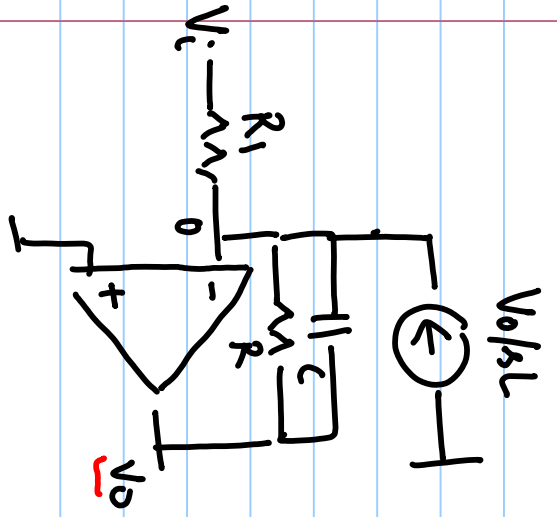
$$L = R_2R_3C_2$$

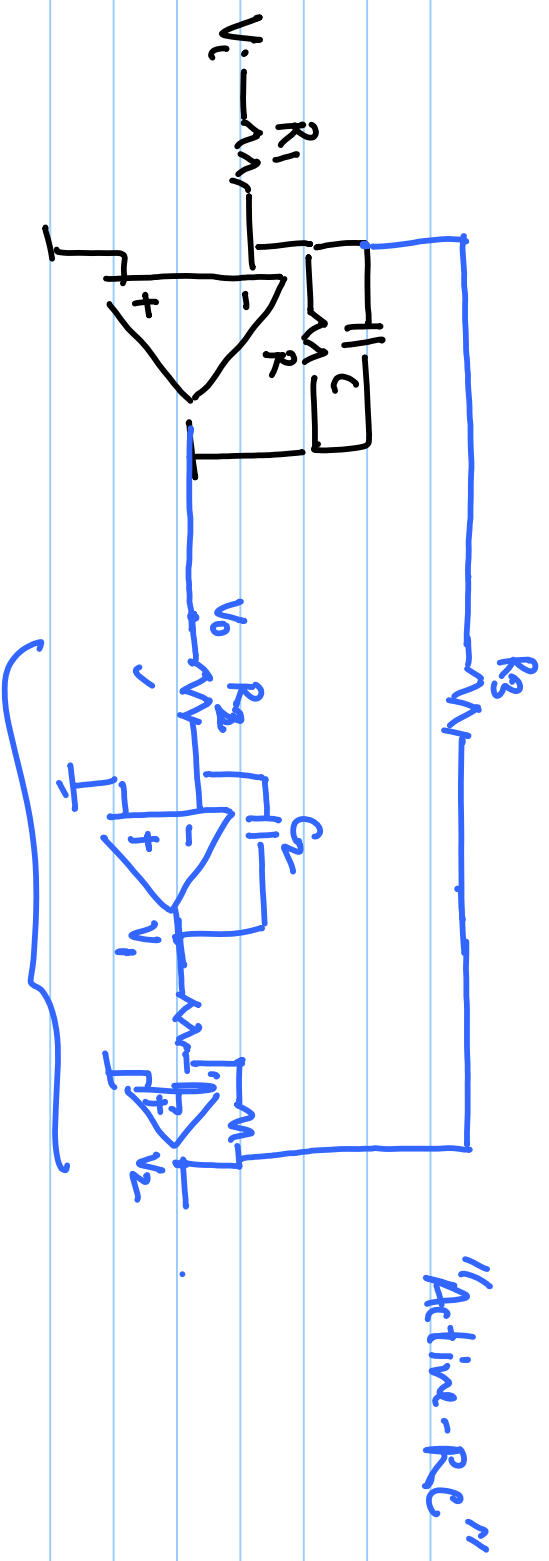
lnn : 170 μm x 170 μm

$$V_2 = \frac{I}{s}$$

$$-V_1 + I V_2 R \frac{1}{s}$$

$$\frac{V_1}{R_1} + \frac{V_0}{sL} = -V_0 \cdot sC - \frac{-V_0}{R}$$



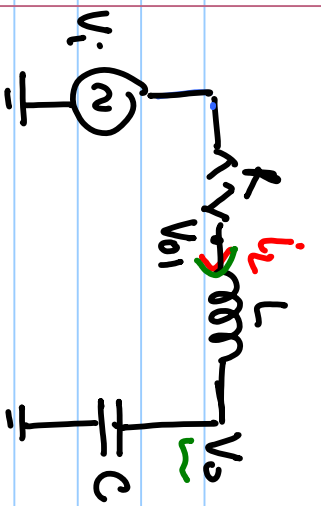


$$\frac{V_0}{V_i} = -\frac{1}{R_1} (sC \parallel \frac{1}{sC} \parallel R)$$

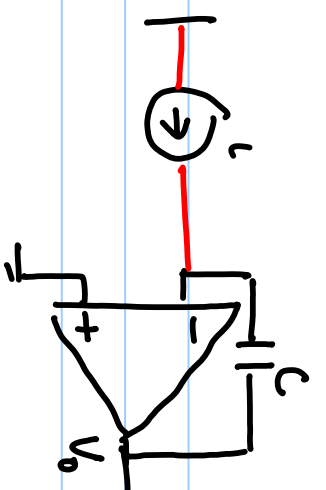
$$= -\frac{1}{R_1} (sR_2R_3C_2 \parallel \frac{1}{sC_2} \parallel R)$$

$$= -\frac{1}{R_1} \frac{sR_2R_3C_2 R}{s^2 C_2 R_2 R_3 C_2 R + sR_2 R_3 C_2 + R}$$

$$\frac{V_1}{V_i} = \frac{1}{sR_2C_2}$$



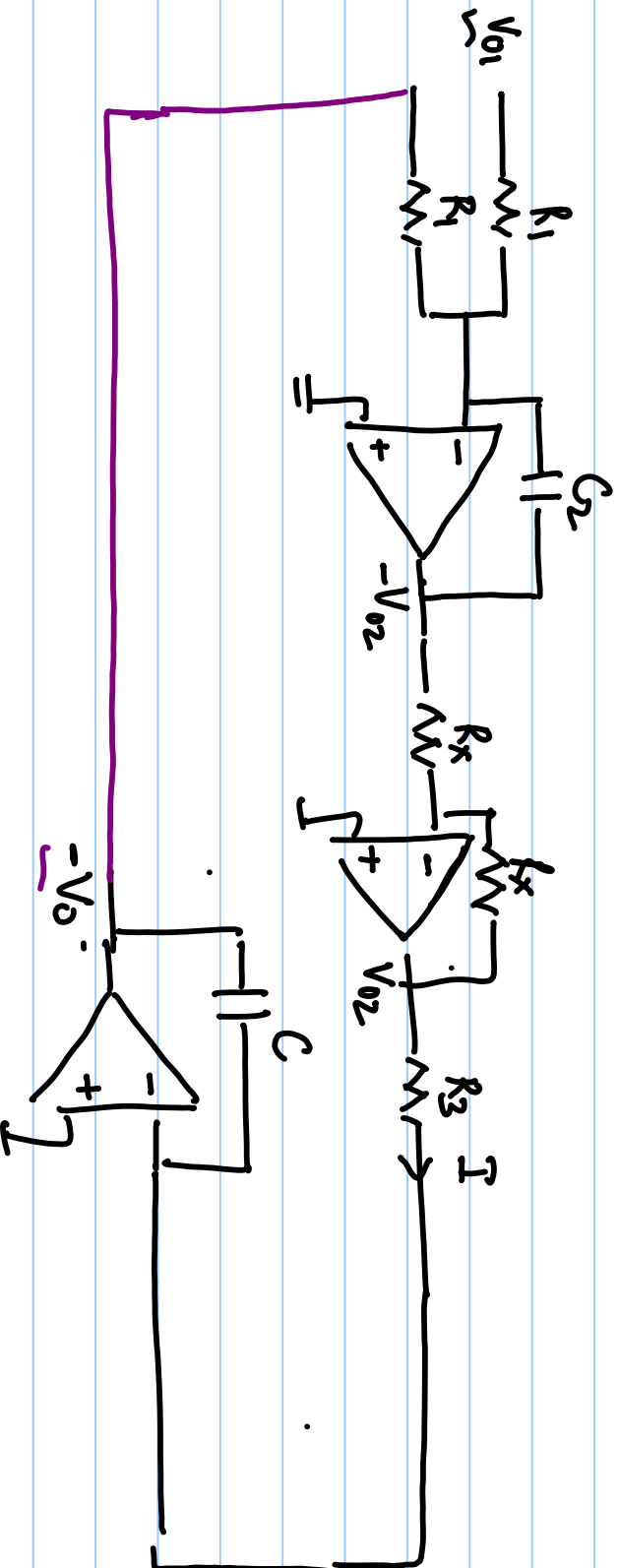
$$i_L = \frac{v_{o1} - v_o}{R_1 L}$$

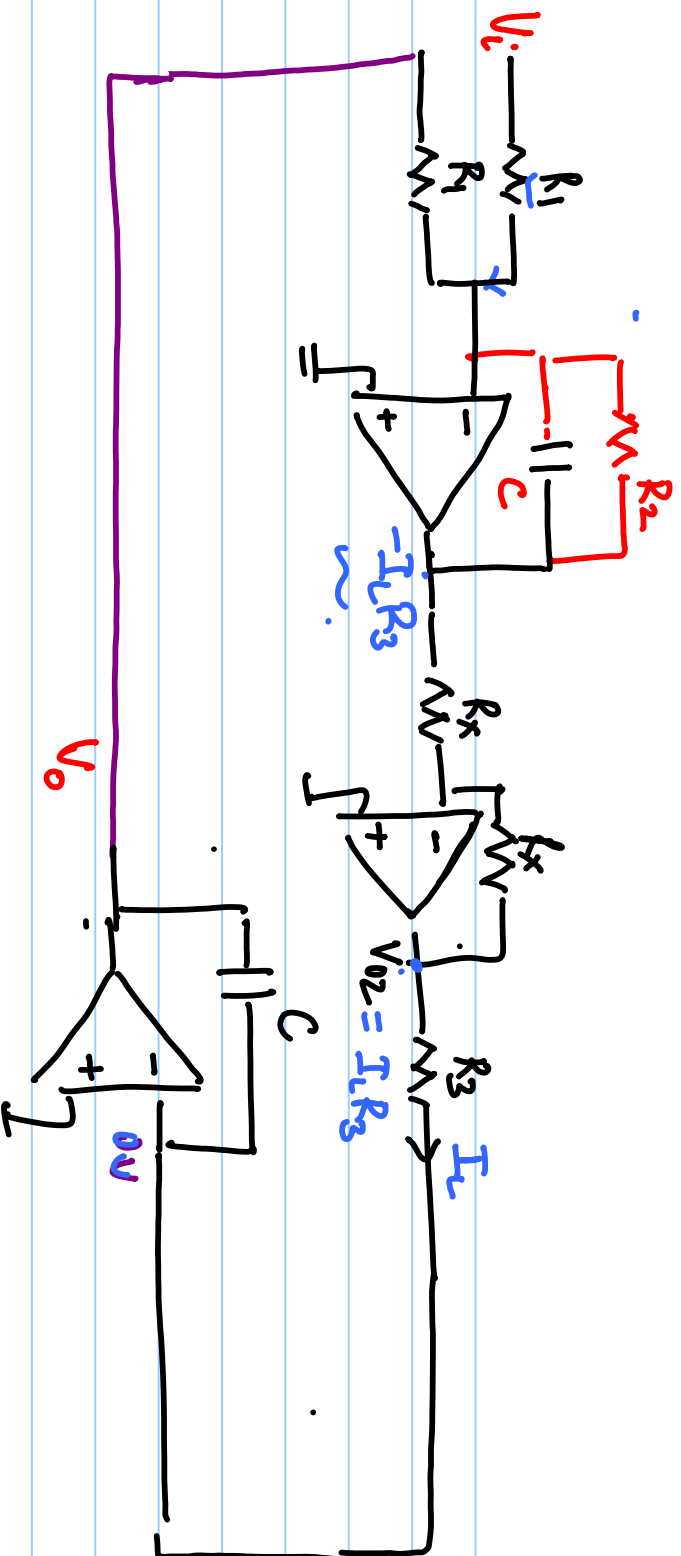


$$v_o = \frac{I_L}{sC}$$

$$I_L = \frac{v_{o2}}{R_3}$$

$$I_L = \frac{v_{o1} - v_o}{R_1 C R_3} = \frac{v_{o1} - v_o}{s R_1 R_3 C}$$





$$V_i - V_{o1} = I_L \cdot R$$

$$\frac{V_i}{R_1} = \frac{V_{o1}}{R_1} + \frac{I_L \cdot R}{R_1}$$

$$\frac{V_{o1}}{R_1} = \frac{V_i}{R_1} - \frac{I_L R_3}{R_2}$$

$$\frac{V_{o1}}{R_1} = \frac{V_i}{R_1} - \frac{I_L \cdot R}{R_1}$$

$$= \frac{V_i}{R_1} - \frac{I_L \cdot R_3}{R_3 \cdot R_1}$$

$$\left\{ \frac{R_3 \cdot R_1}{R} \right\} \cdot I_L$$

$$\frac{V_{o1}}{R_1} = \frac{V_i}{R_1} - \frac{I_L R_3}{R_2}$$

