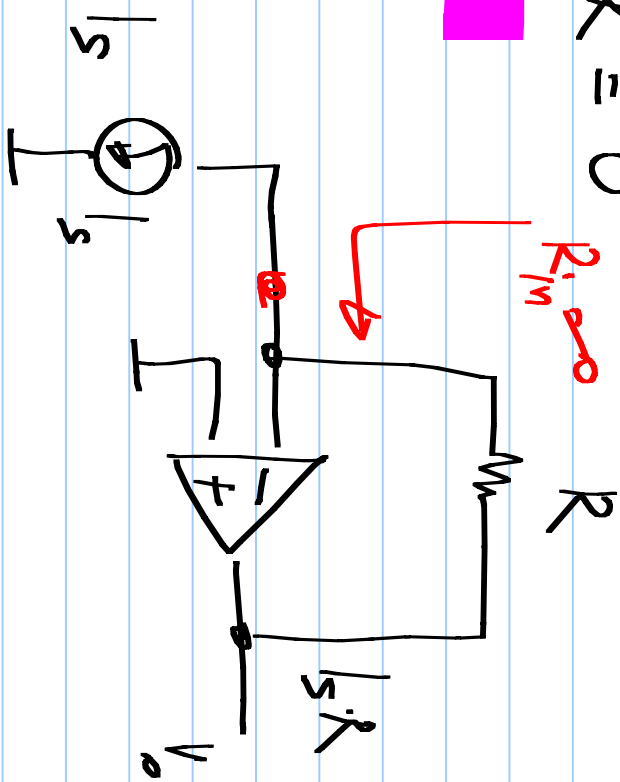
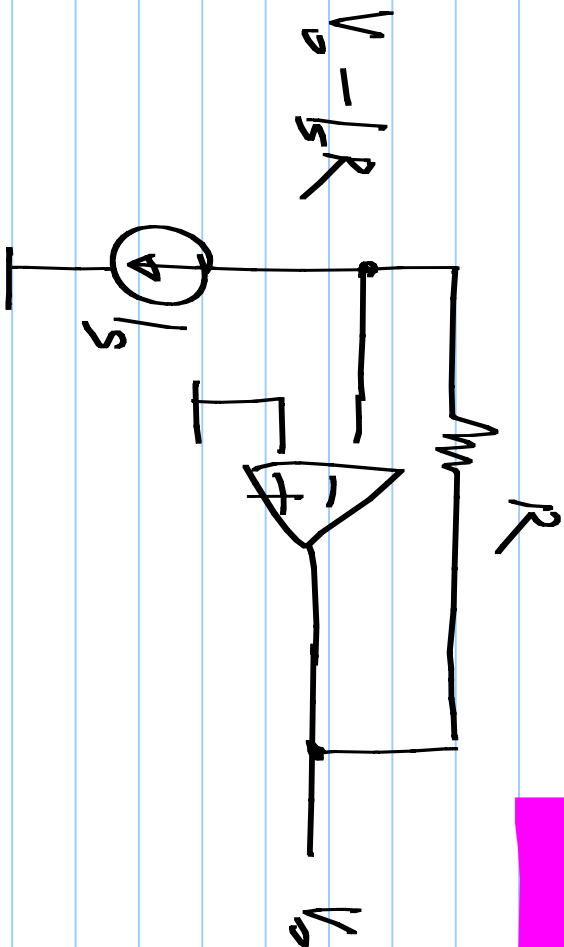
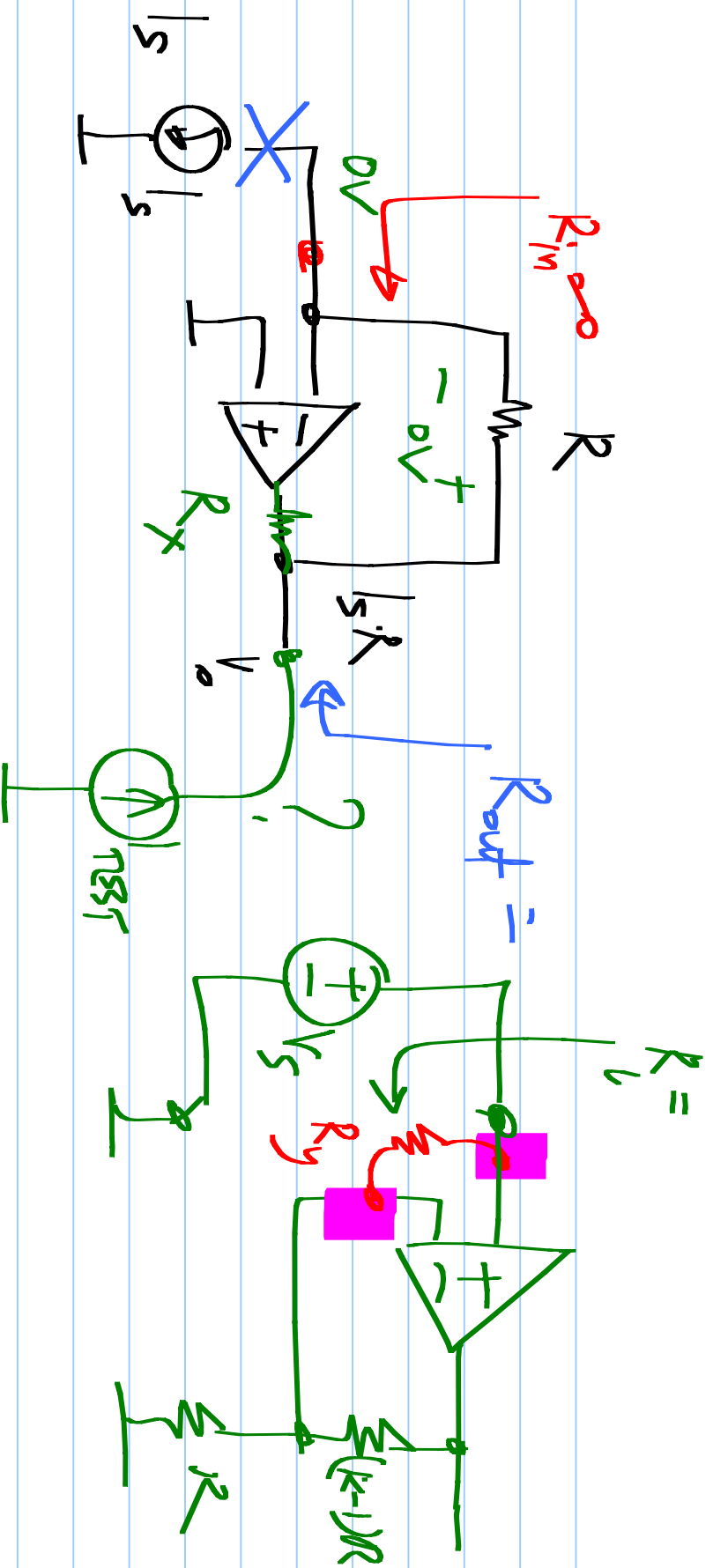
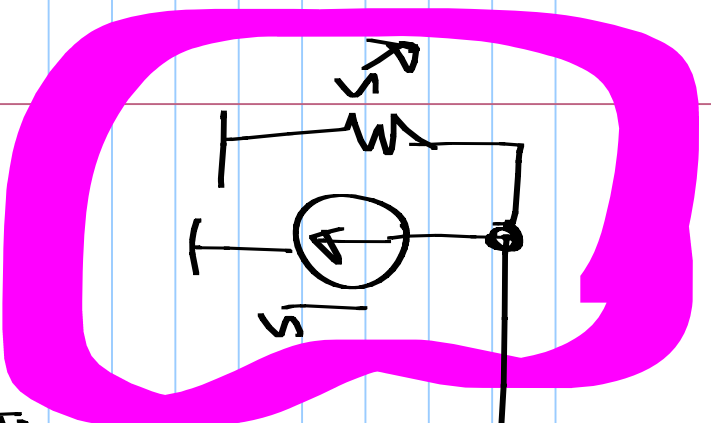


# Lecture 21 . CCVS with an opamp.

$$V_o = I_s R \quad ; \quad V_o - I_s R = 0$$

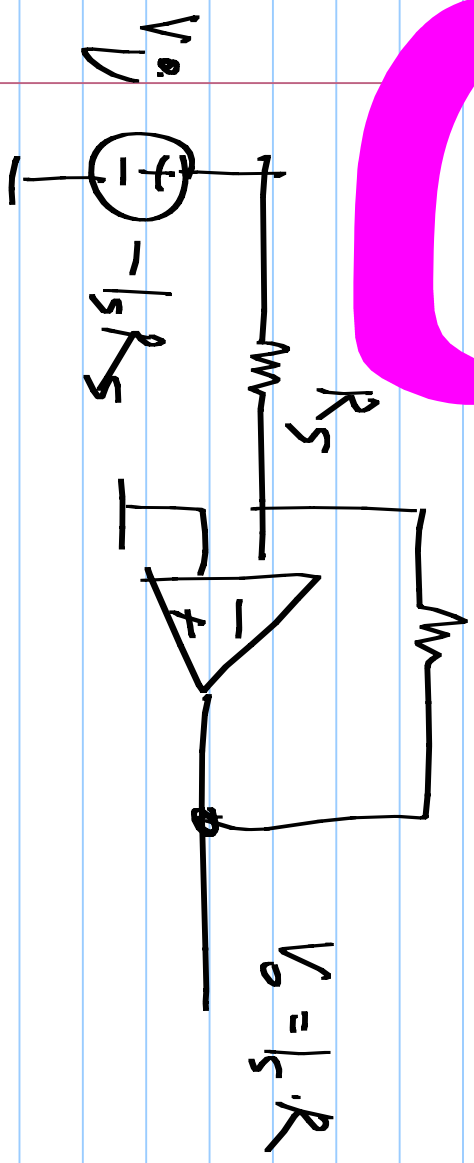






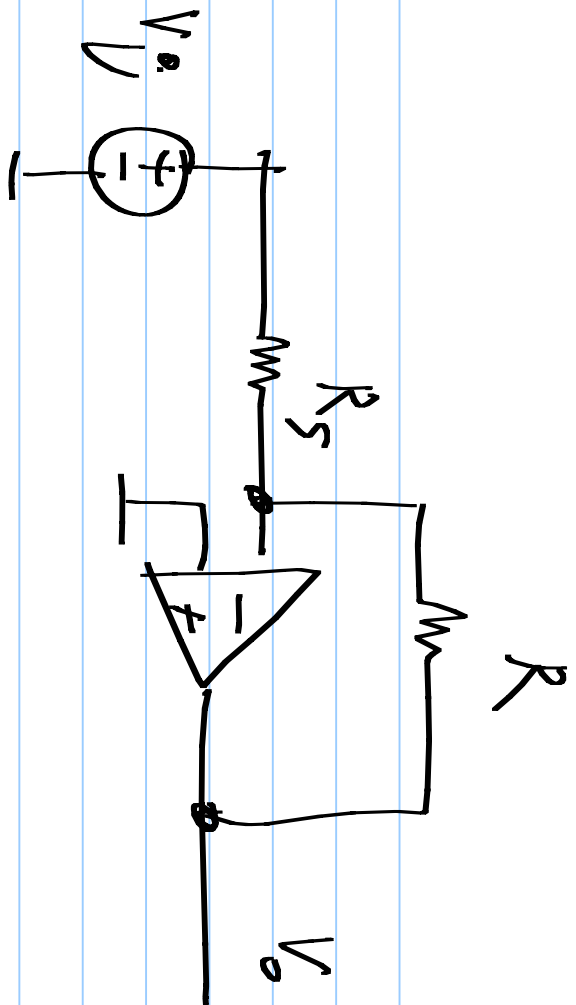
$$V_o = I_s \cdot R$$

$$\frac{V_o}{I_s} = \frac{R}{R_s}$$



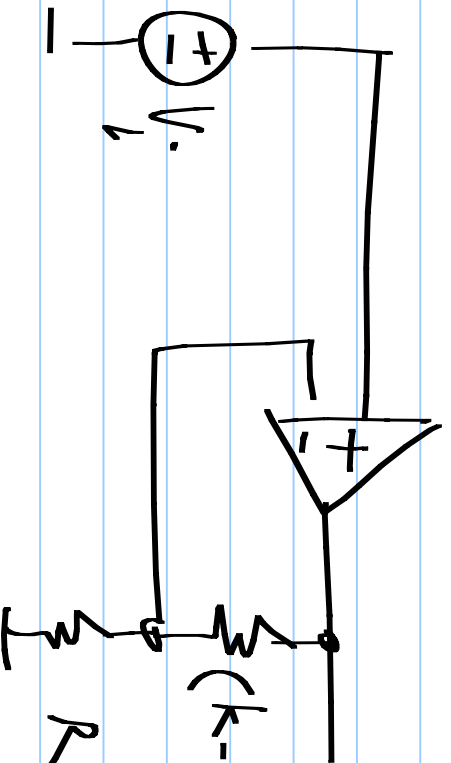
$$V_o = I_s \cdot R$$

## Inverting amplifier



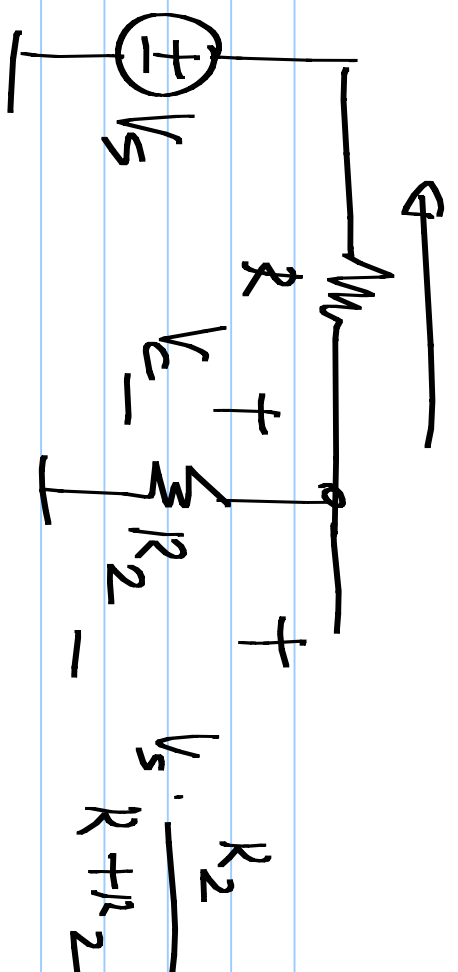
$$\frac{V_o}{V_i} = -\frac{R}{R_S}$$

## non-inverting amplifier



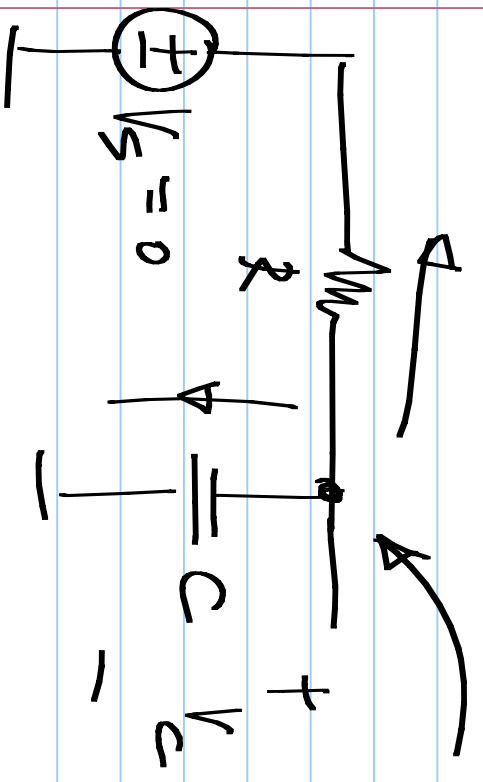
$$\frac{V_o}{V_i} = k$$

$$k = \frac{R_1 + R_2}{R_2} + 1$$



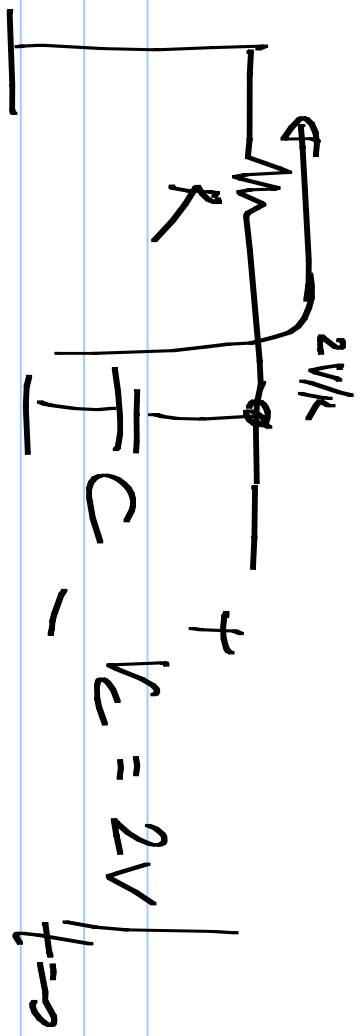
$$\frac{V_c - V_s}{R} + \frac{V_c}{R_2} = 0$$

$$V_s \cdot \frac{R_2}{R + R_2}$$



$$\frac{V_c - V_s}{R} + C \cdot \frac{dV_c}{dt} = 0$$

$$\frac{dV_c}{dt} + \frac{1}{RC} \cdot V_c = \frac{V_s}{RC}$$



$$\frac{dV_C}{dt} + \frac{1}{RC} V_C = 0$$

