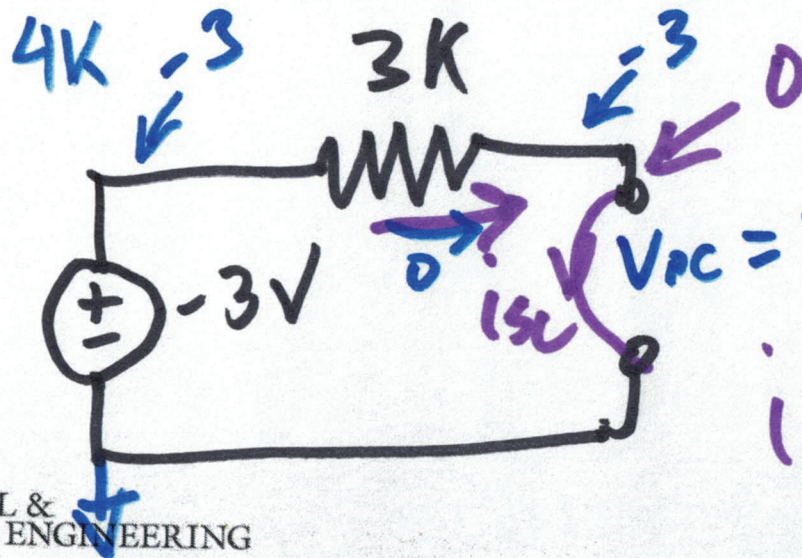
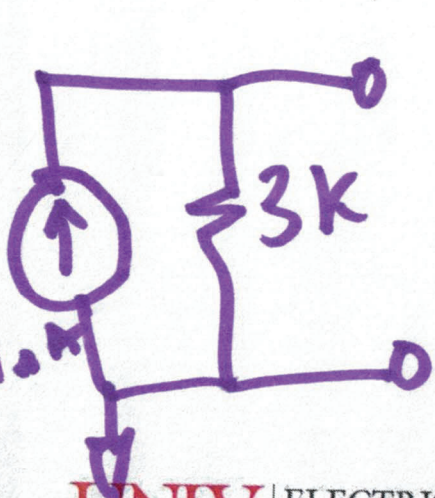
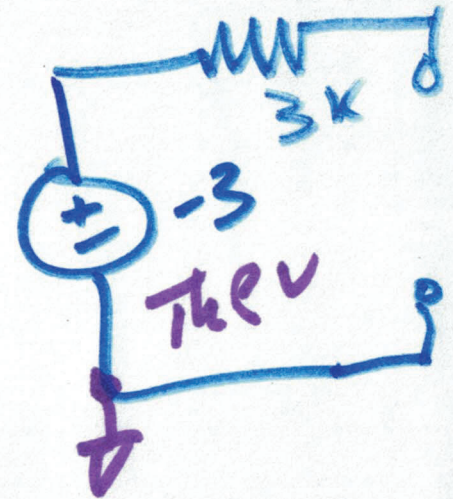
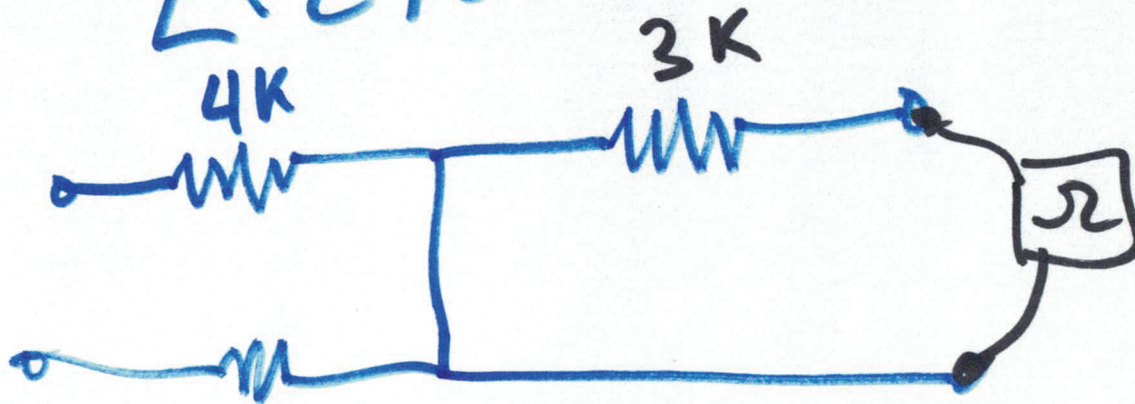


EE 220 circuits I

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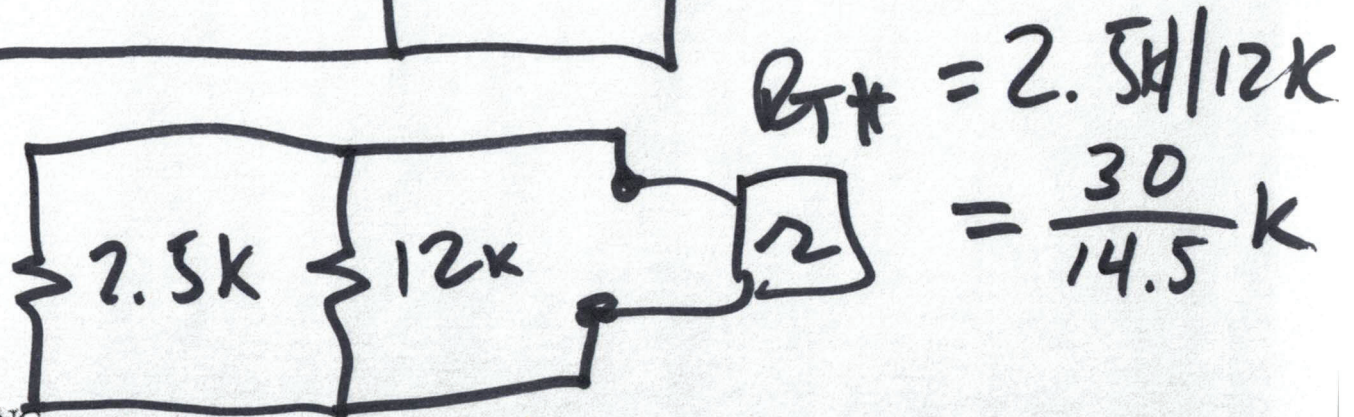
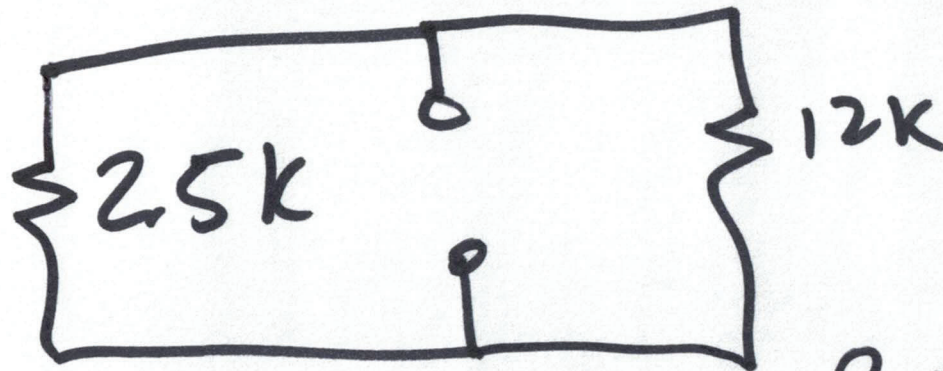
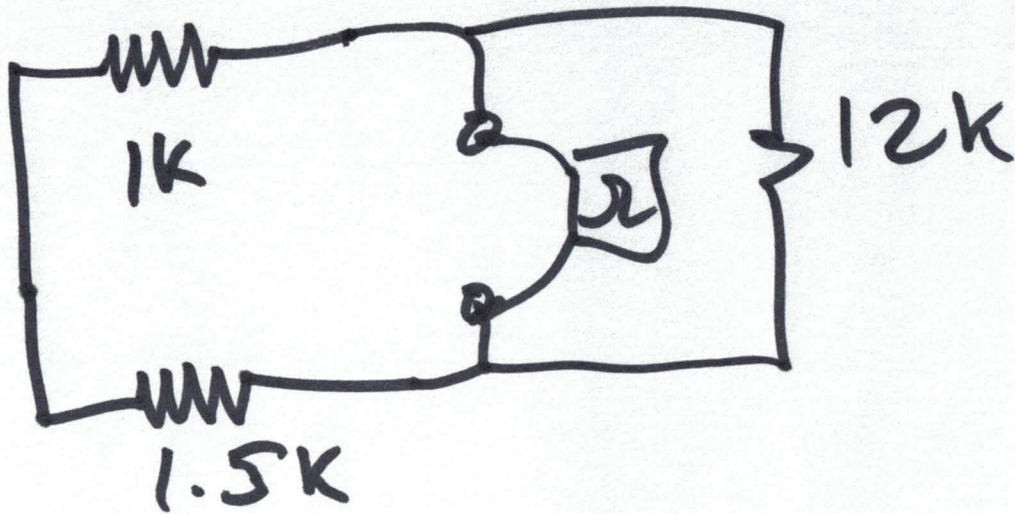
Lecture 11

$$R_{TH} = 3K$$



$$V_{OC} = V_{THN} = -3$$

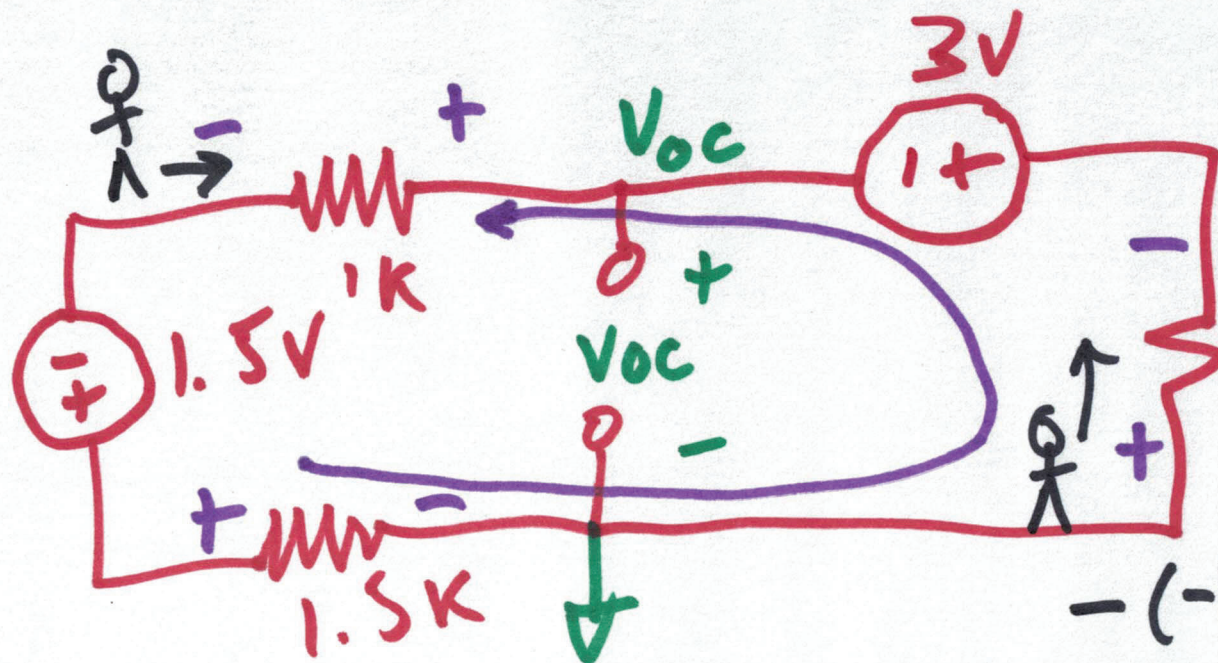
$$I_{SC} = \frac{-3}{3K} = -1 \mu A$$



$$R_{T*} = 2.5k / 12k$$

$$= \frac{30}{14.5} k$$

2)

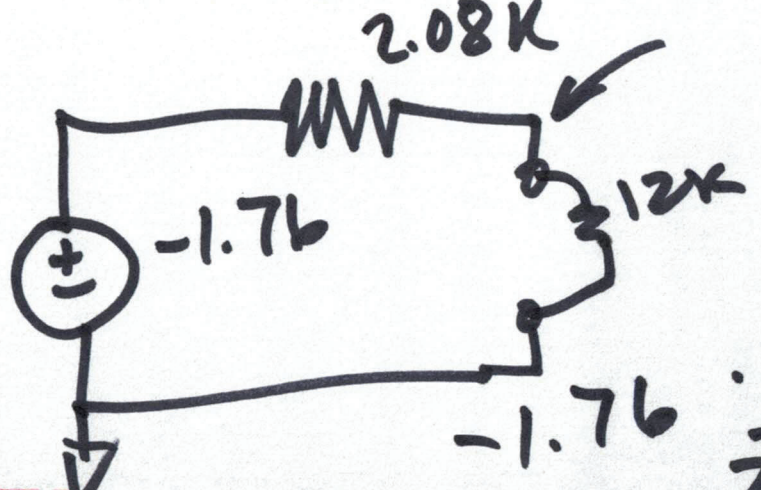


$$12k \cdot (-1034A) = -1.24V$$

$$-(-1.24) - 3 = \underline{\underline{-1.76V}}$$

V_{TH}

$$+1kI + 3 + 12kI + 1.5kI - 1.5 = 0$$



$$14.5kI = -1.5$$

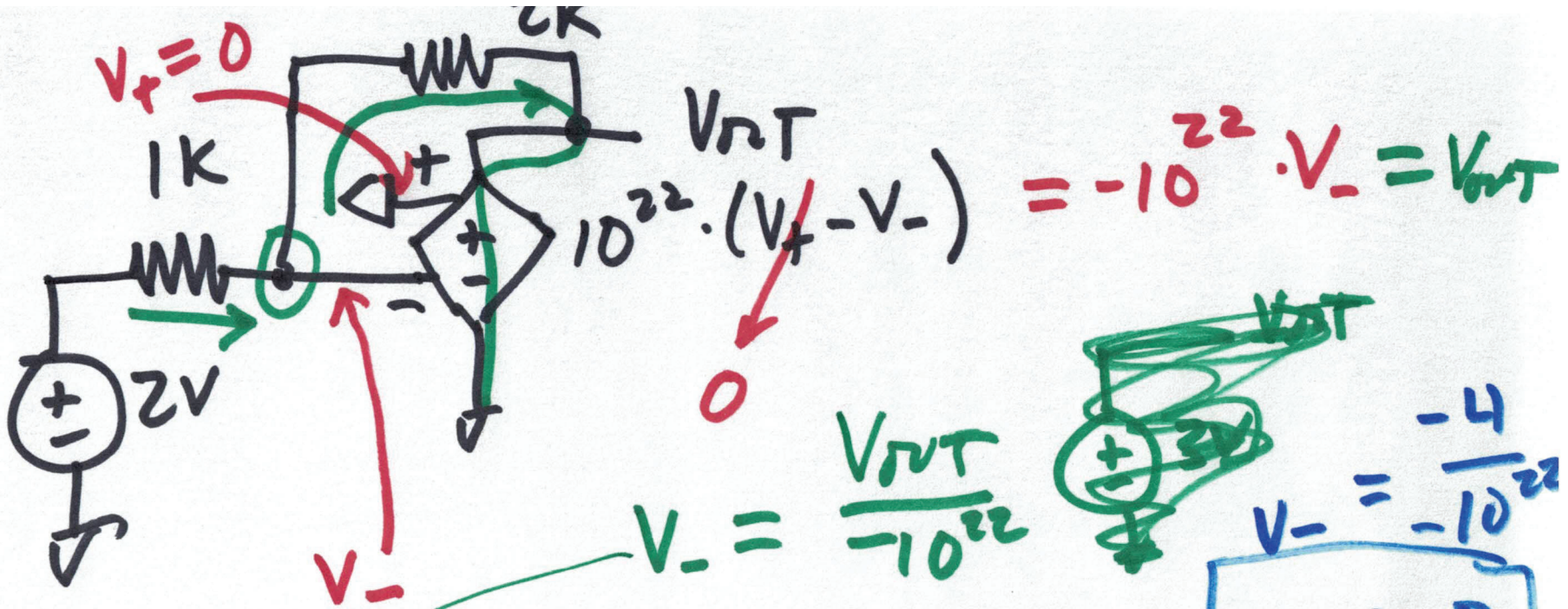
$$I = \frac{-1.5}{14.5k}$$

$$I = -1.0345 \times 10^{-4}$$

$$I = -1034A$$

$$V_L = 1.5V$$

5)



$$\frac{2 - V_-}{1K} = \frac{V_- - V_{out}}{2K}$$

$$V_{out} = 3 \cdot \frac{V_{out}}{-10^{22}} - 4$$

$$4 - 2V_- = V_- - V_{out}$$

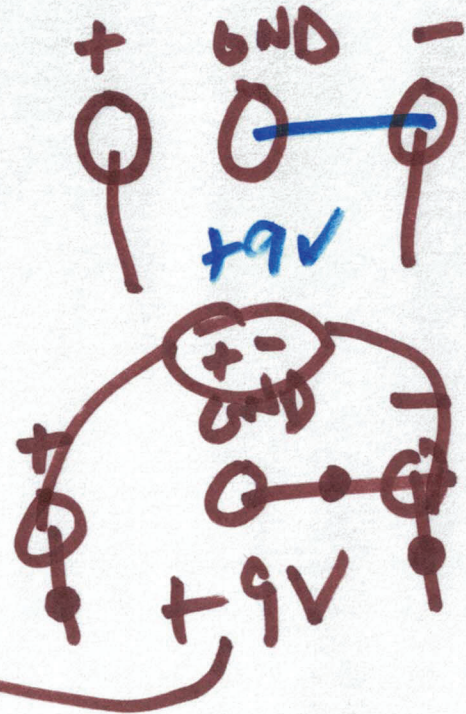
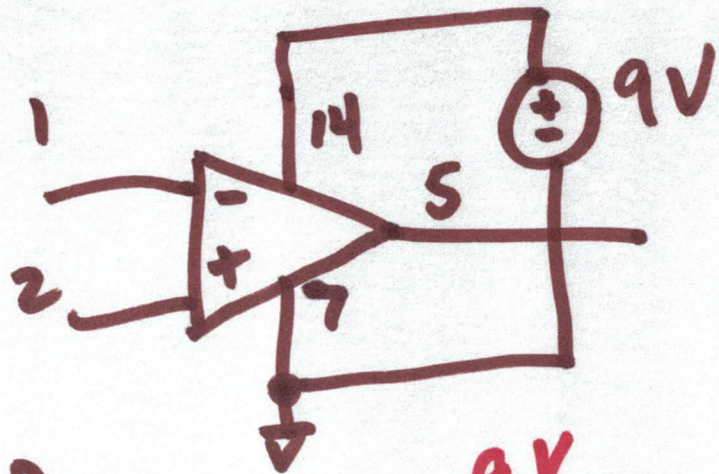
$$V_{out} = 3V_- - 4$$

A)

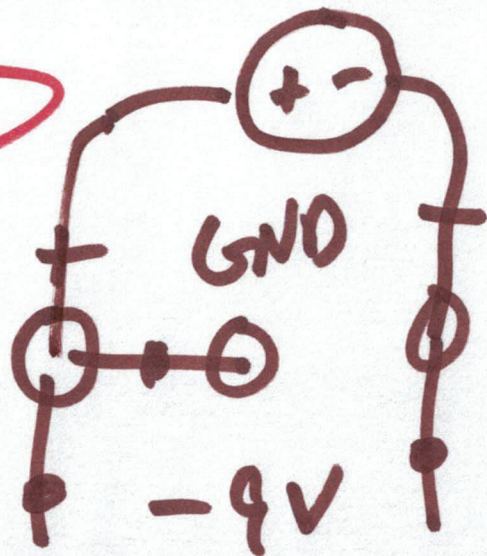
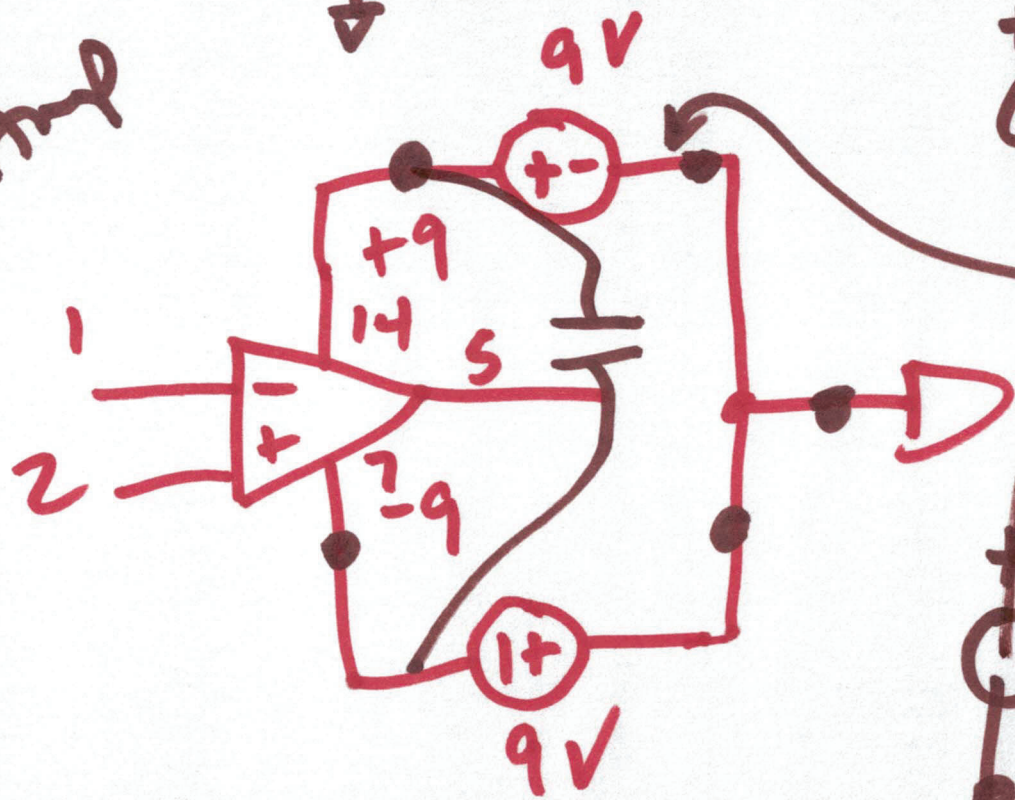
$$V_{out} + \frac{3}{10^{22}} V_{out} = -4$$

$$V_{out} \left(1 + \frac{3}{10^{22}} \right) = -4$$

$$V_{out} \approx -4$$

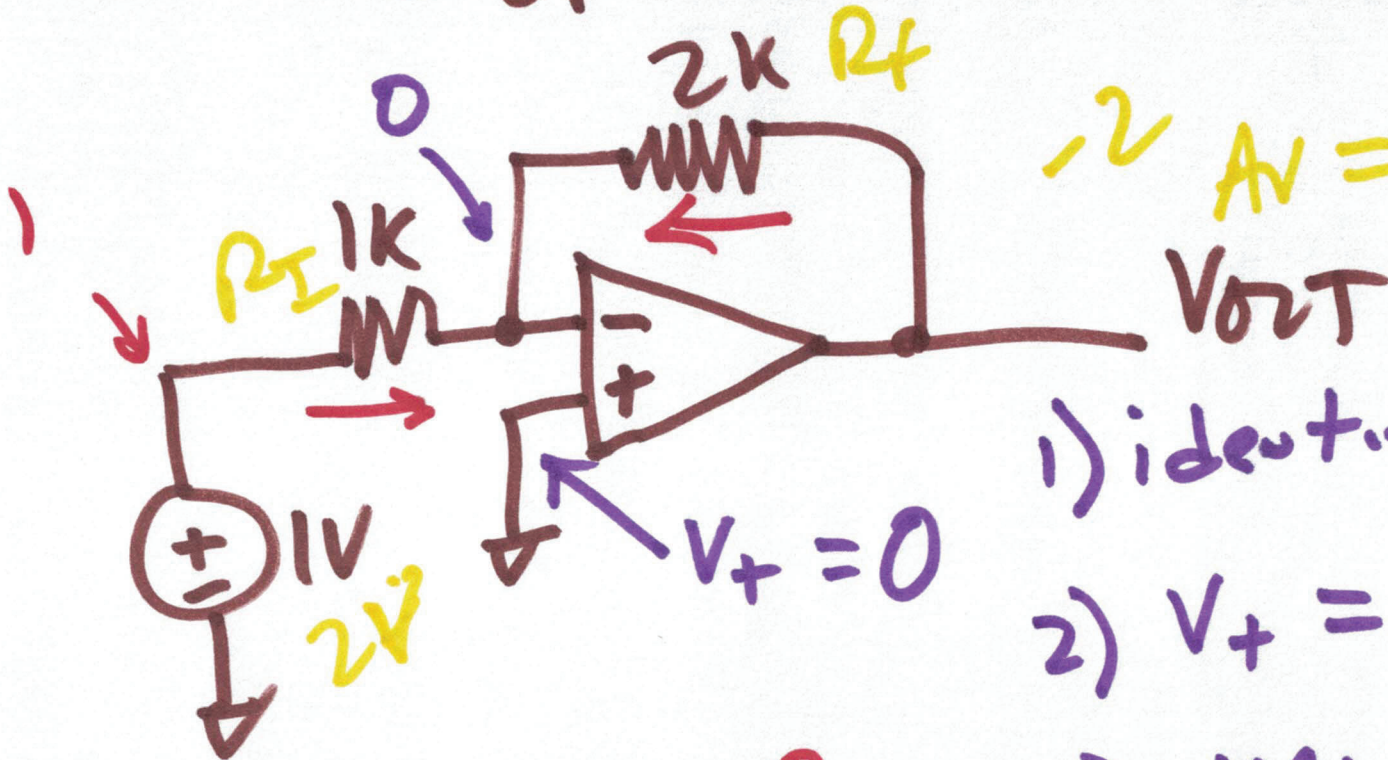


∞ Imp



6)

OP-AMP Operational - Amplifier



$$-2 \quad A_v = -\frac{R_f}{R_1}$$

1) identify V_+ voltage

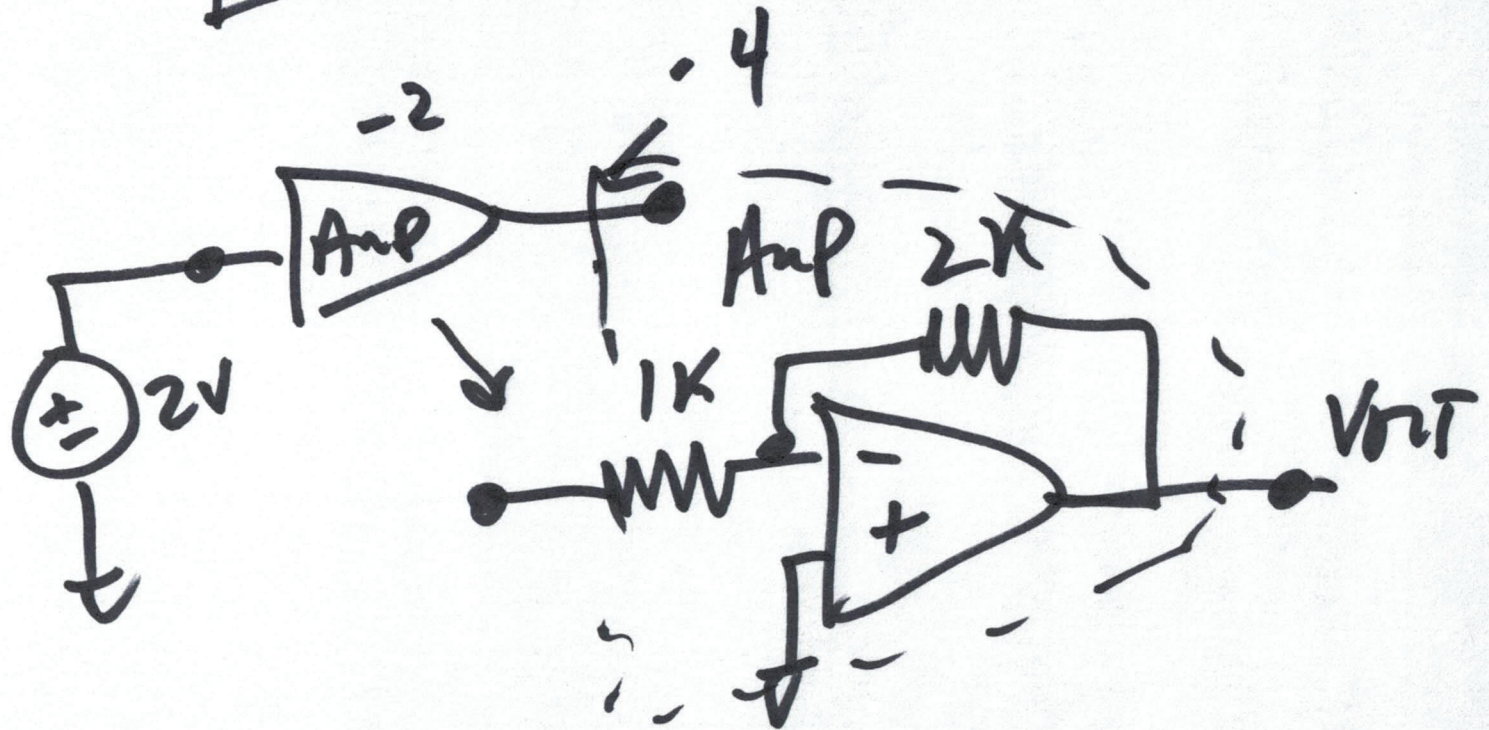
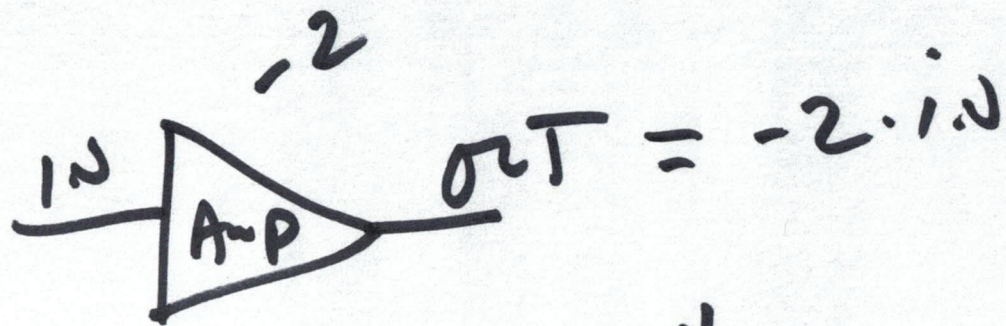
2) $V_+ = V_-$

3) KCL at V_-

$$\frac{1-0}{1k} - \frac{V_{out}-0}{2k} = 0$$

$$V_{out} = -2V$$

$$= -4V$$



8)