lab 1

Fig (1.1a)

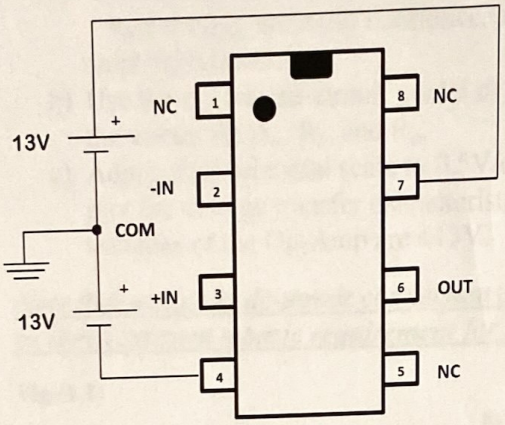
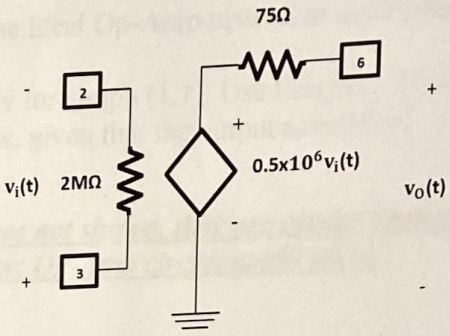


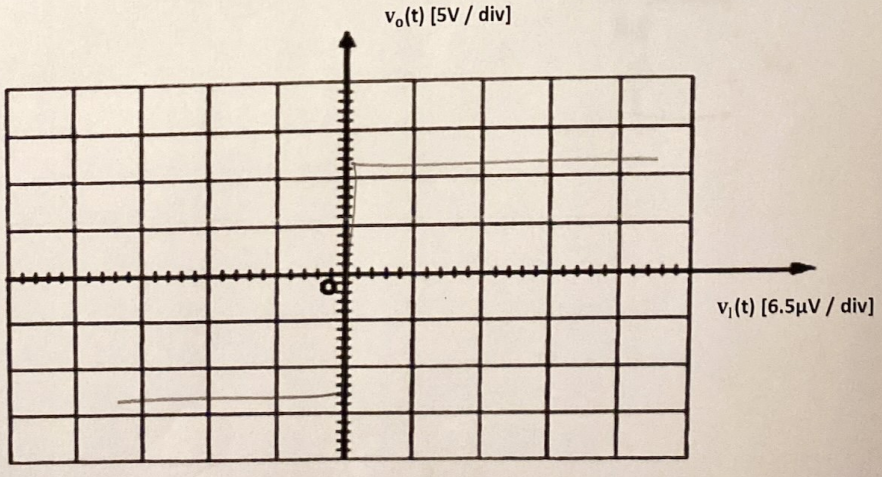
Fig (1.1b)



1.3 Prelab Assignment (3 marks in total, 1 mark for each step):

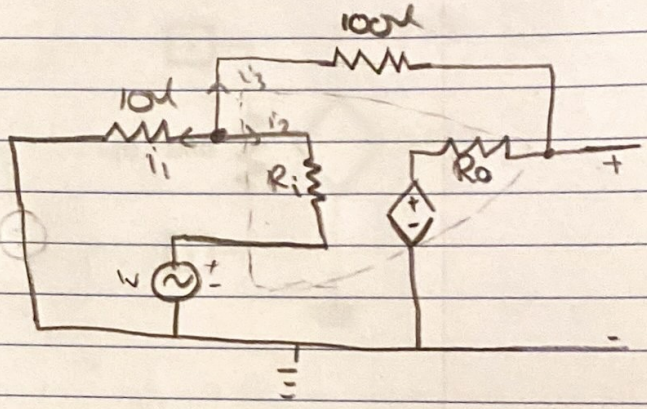
Step 1: The circuit in Fig (1.1a) shows the pin identification for the μA741 Op-Amp and the connections of the two dc-power supplies that are required for its operation. Suppose now that pin (2) is connected to the common ground (COM), while a triangular wave, voltage $v_I(t)$, is applied to pin (3), use Graph (1.1) to show how the resulting voltage-transfer characteristics, [$v_o(t)$ vs $v_I(t)$], would look like, given that the output saturation voltages of the Op-Amp are ±13V and the equivalent-circuit model of the Op-Amp is shown in Fig (1.1b).

Graph (1.1)



pre lab 1

2a) $V_1 = 1$
$V_o = ?$
$R_o = ?$
$R_i = ?$

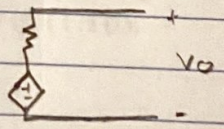


$$0 + \frac{0-1}{R_i} + \frac{0-V_o}{100K} = 0$$

$$\frac{-1}{R_i} = \frac{-V_o}{100K\Omega}$$

only 1 node!

$R_i = 2M\Omega$
$R_o = 75\Omega$?



3)a)

$$\frac{0-1}{10K} + \frac{0-V_o}{100K} = 0$$

$$\frac{V_o}{100} = \frac{1}{10}$$

$$\boxed{V_o = 10V}$$

$A = \frac{10}{1}$ $\boxed{A = 10}$