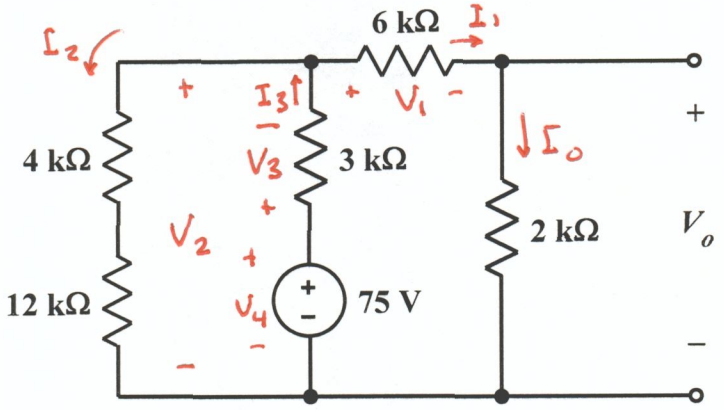
EE 2240

Problem #04

Find V_o using linearity and proportionality, with the assumption that $V_o = 4$ V. Show all details of your work.



Assume $V_o = 4$ V.

Then $I_o = \frac{V_o}{2k\Omega} = 2$ mA

$I_1 = I_o = 2$ mA

$V_1 = (6k\Omega)\, I_1 = 12$ V

$V_2 = V_1 + V_o = 16$ V

$I_2 = \frac{V_2}{4k\Omega + 12k\Omega} = 1$ mA

$I_3 = I_1 + I_2 = 3$ mA

$V_3 = (3k\Omega)\, I_3 = 9$ V

$V_4 = V_3 + V_2 = 25$ V

$\frac{V_o}{75V} = \frac{4V}{V_4} \Rightarrow V_o = 12$ V