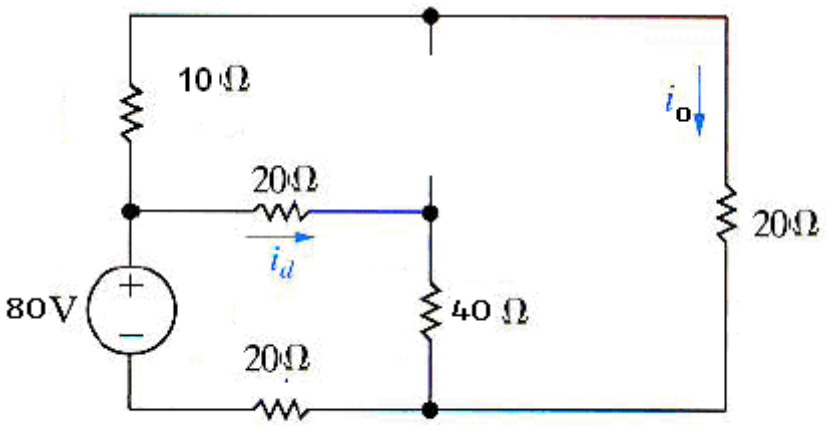
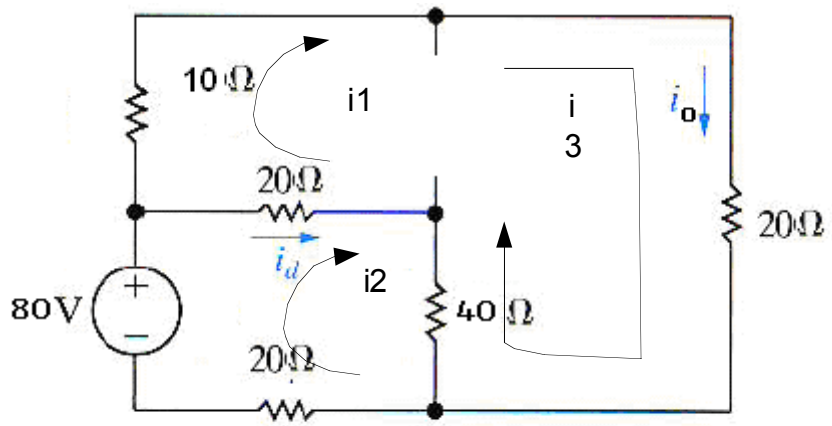
EE 210 Quiz#2
Name



Calculate the current i_o for the circuit above using mesh current analysis.

Solution:

Supermash , dependent source may be taken out.



KVL for two loops:
L1: loop with 80 V source:

80-(20+40+20) i2 + (20) i1 + (40)i3 =0

i1 - 4i2 + 2i3 = 4 **(1)**
L2:
(20+10)i1 +(20+40)i3 –(20+40) i2 = 0
30 i1 + 60 i3 – 60 i2 =0

i1 + 2 i3 - 2 i2 = 0 **(2)**

Finally current source eqution:

i3 –i1 = 0.5 id = 0.5 (i2 – i1)

i1 + i2 - 2 i3= 0 **(3)**

Solving 3 equations simultaneously,

i1= -1A , i2 = -2A i3 = -1.5A .

io= i3 = -1.5A .

A minus sign of the current means the current flows reverse of the orientation we choose.