Lecture 6 : 02/03/05

~~Pop Quiz~~ → No!

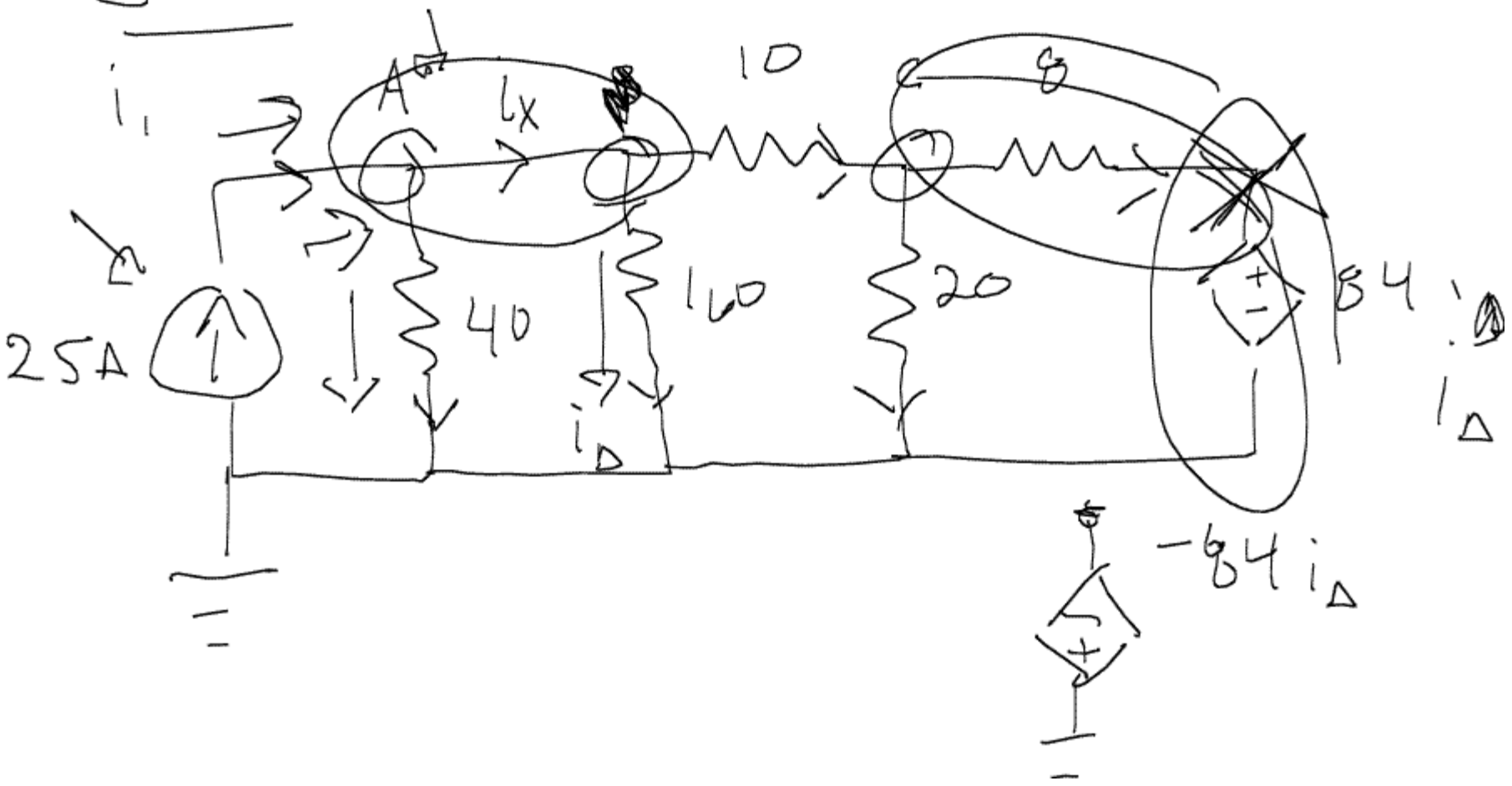
(Just kidding!)

Administrivia → Grades online

may be inaccurate!

↳ let us know!

Ex. 1 (4.20)



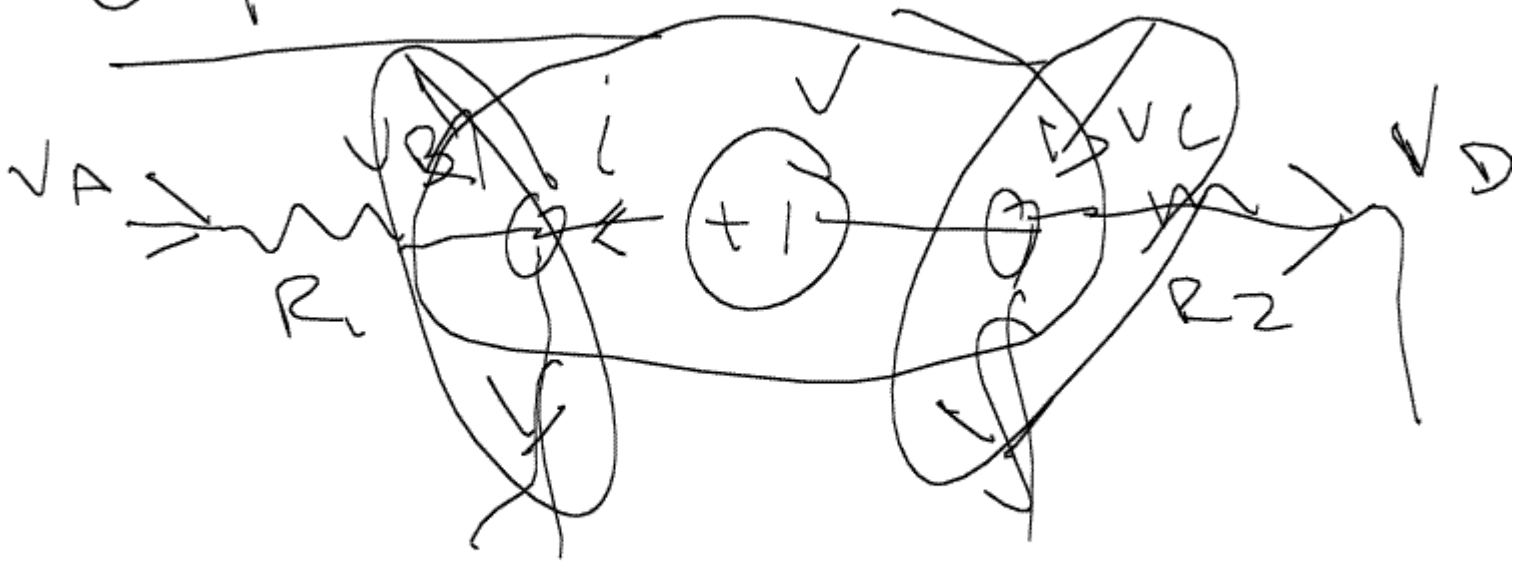
(A) $25 = \frac{A-0}{40} + \frac{A-0}{160} + \frac{A-C}{10}$

(B)

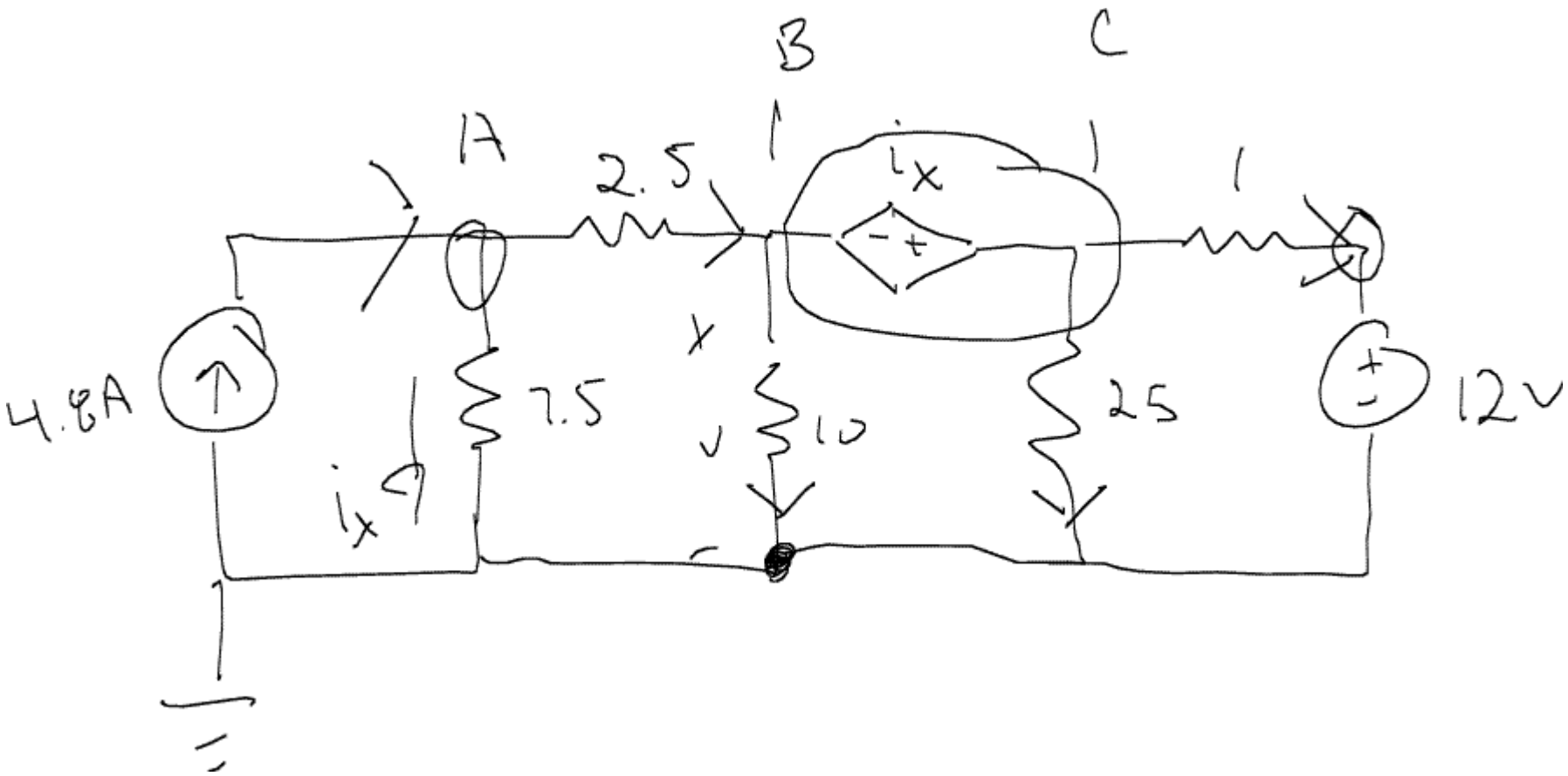
(C) $\frac{A-C}{10} = \frac{C-0}{20} + \frac{C-64\,i_\Delta}{8}$

$i_\Delta = \frac{A-0}{160}$

Super node



$$V_B - V_C = V$$

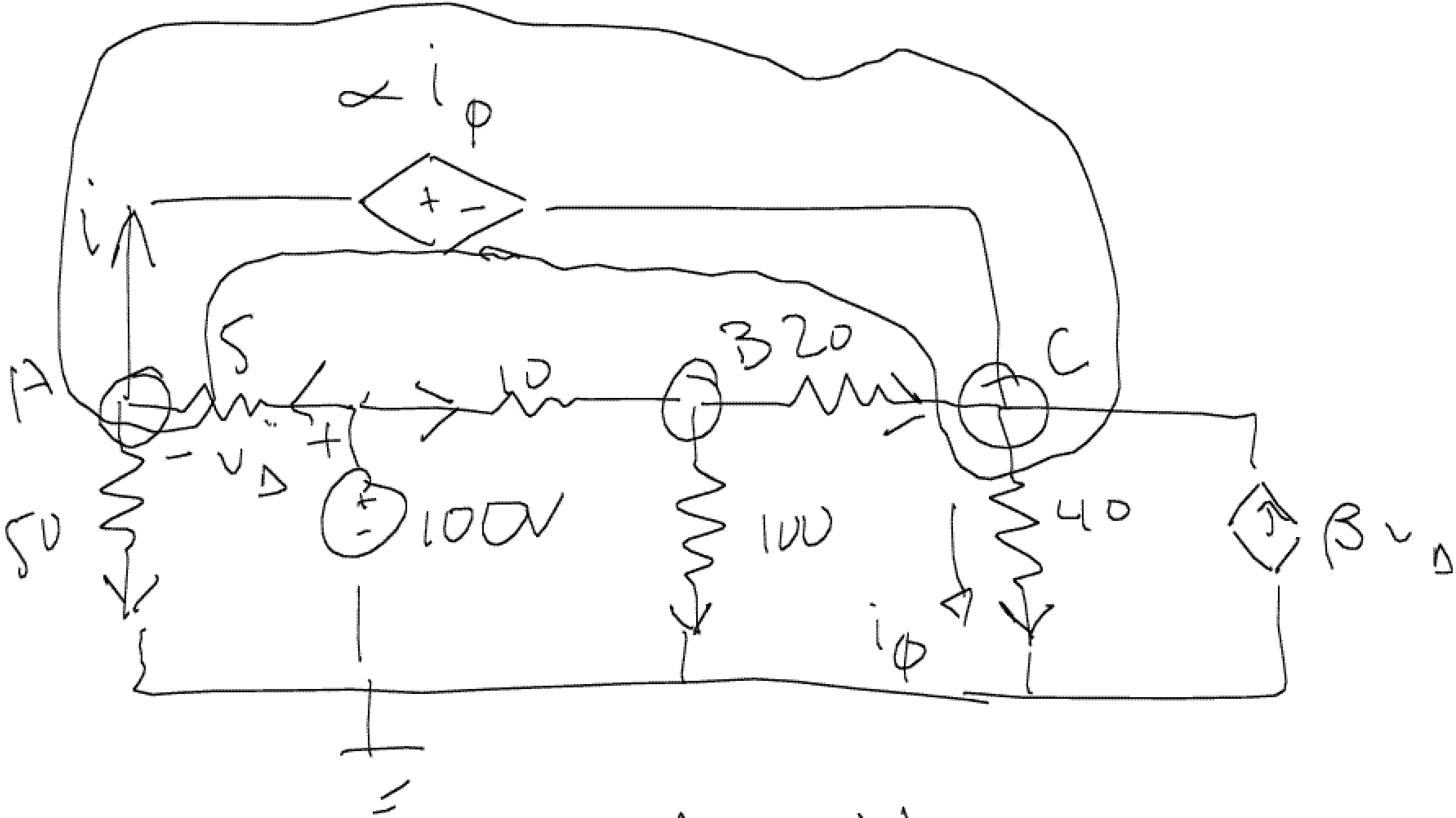

B
C
A
2.5
i_x
1
1
1
4.8A
7.5
10
25
12V
i_x
x
v

(A) $4.8 = \frac{A}{7.5} + \frac{A-B}{25}$

(B-C) $\frac{A-B}{2.5} = \frac{B}{10} + \frac{C}{25} + \frac{C-12}{1}$

$C - B = i_x$

$i_x = \frac{A}{7.5}$



Hint: related to HW??

(A) - (C) (1)

$$\frac{100-A}{5} + \frac{B-C}{20} + \beta v_A$$

$$= \frac{A}{50} + \frac{C}{40}$$

(B) (2)

$$\frac{100-B}{10} = \frac{B}{100} + \frac{B-C}{20}$$

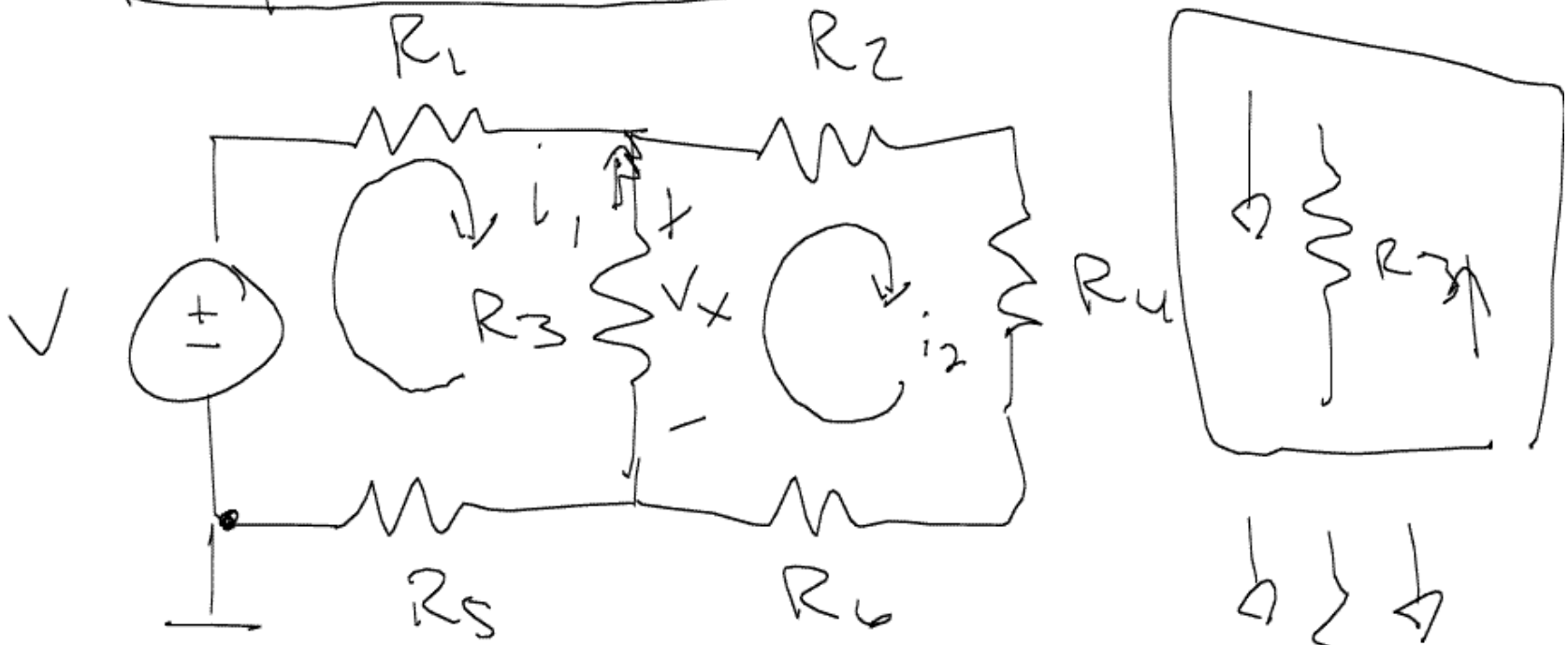
Constraint

$$A - C = \alpha i_\phi \quad (3)$$

$$i_\phi = \frac{C}{40} \quad (4)$$

$$V_\Delta = 100 - A \quad (5)$$

Mesh current method*



*Note: You are not responsible for this, i.e.. you won't be quizzed on this!

① $+V - i_1 R_1 - (i_1 - i_2) R_3$

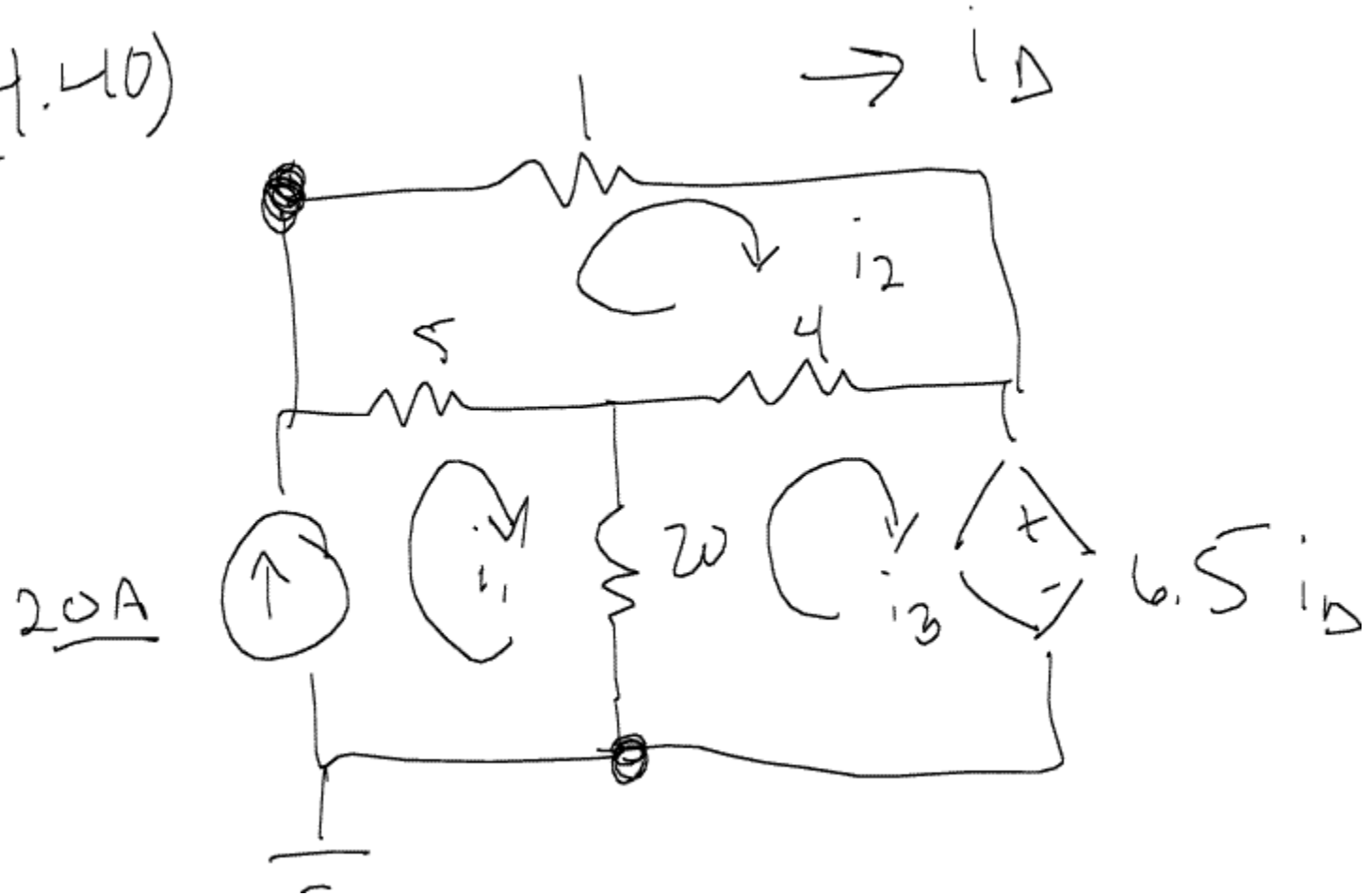
$- i_1 R_5 = 0$

② $-(i_2 - i_1) R_3 - i_2 R_2 - i_2 R_4$

$- i_2 R_6 = 0$

$-(i_1 - i_2) R_3 = v_x$

(4.40)



① $i_1 = 20\ A$

② $-(1)\,i_2 - (4)(i_2 - i_3) - (5)(i_2 - i_1) = 0$

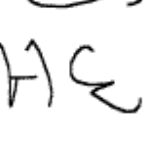
③ $-20(i_3 - i_1) - 4(i_3 - i_2)$

$-6.5\,i_\Delta = 0$

$i_\Delta = i_2$

Next week

(1) BART'S FAVOURITE METHOD ≡ SOURCE TRANSFORMS



ON THE TEST!

(2) Thevenin / Norton, Superposition etc