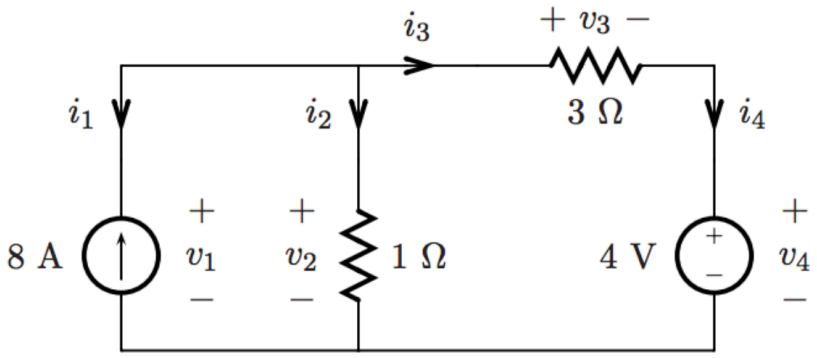
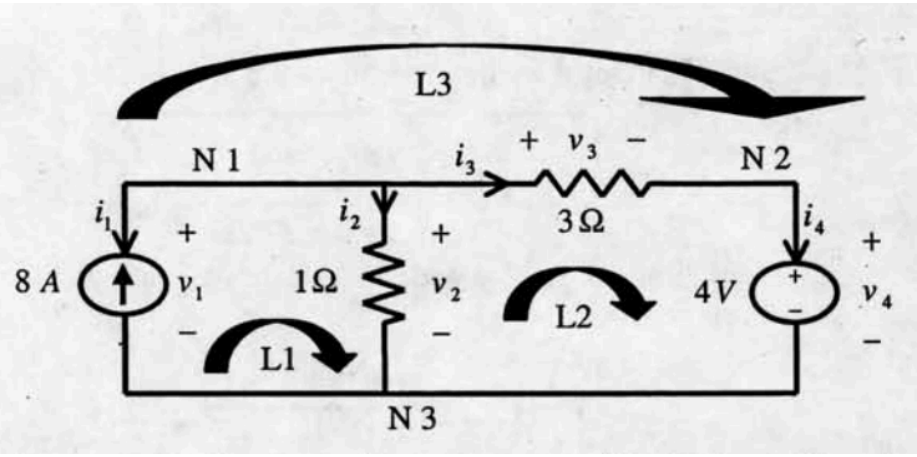
POP QUIZ-5 SOLUTIONS

For the circuit shown below how many nodes are there? 3 points



- 6
- 4
- 3 ✓
- 2

There **are 3 nodes in the circuit.**



$$-i_1 - i_2 - i_3 = 0 \quad \text{For N1}$$
$$i_3 - i_4 = 0 \quad \text{For N2}$$
$$i_1 + i_2 + i_4 = 0 \quad \text{For N3}$$

But if the question is asking how many independent nodes, then there are only 2 Because $i_3 = i_4$

2. For the same circuit above how many independent loops are there?

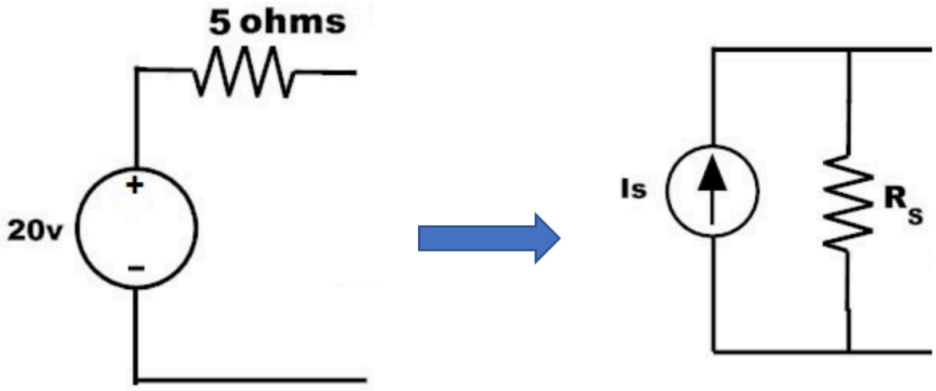
The network has three loops. Only **two of the loops are independent** since v_1 and v_2 are the same voltage

The KVL for the three loops are

$$v_1 - v_2 = 0 \quad \text{For L1}$$
$$v_2 - v_3 - v_4 = 0 \quad \text{For L2}$$
$$v_1 - v_3 - v_4 = 0 \quad \text{For L3}$$

If circuit in the left side below is to be transformed to a current source Is with a resistor Rs in parallel, what is the value of Is?

2 points



- (●) 4 A ✓
- ( ) 20 A
- ( ) 5 A
- ( ) None of the above

$I_s = 20/5 = 4$ A

$R_s = 5$ ohms

What is the value of Rs

2 points

- [x] 5 ohms
- [ ] 4 ohms
- [ ] 20 ohms
- [ ] None of the above