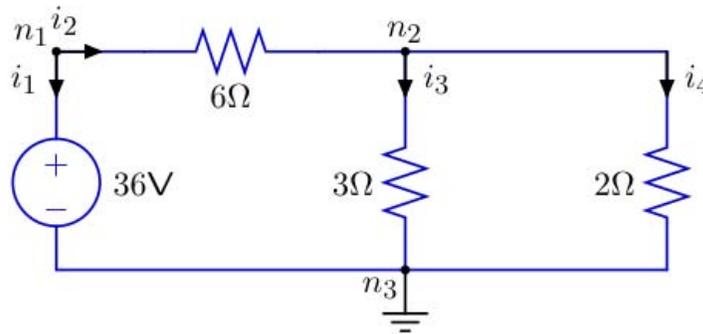


## Problem Wk.7.2.3: NVCC

For the following circuit



### Part 1: Equations

Indicate which of the following equations could be produced by steps 4 and 5 of the NVCC method (see Section 6.4.1 of the Course Notes). Note that the equations must be consistent with the directions of the current arrows that are shown in the diagram (changing the directions of one or more arrows would lead to a different set of equations).

1.  $i_1 - i_2 = 0$
2.  $-i_1 - i_2 = 0$
3.  $-i_1 + i_2 = 0$
4.  $-i_3 + i_4 = 0$
5.  $-i_3 - i_4 = 0$
6.  $i_2 - i_3 - i_4 = 0$
7.  $i_1 + i_3 + i_4 = 0$
8.  $-i_2 + i_3 - i_4 = 0$
9.  $n_2 - n_1 = 6 i_2$
10.  $n_1 - n_2 = 6 i_2$
11.  $n_2 - n_1 = i_2$
12.  $n_1 - n_3 = 36$
13.  $n_1 - n_3 = i_1$
14.  $-n_1 - n_3 = i_1$
15.  $-n_2 = 3 i_3$
16.  $n_2 - n_3 = i_3$
17.  $n_2 - n_3 = 3 i_3$
18.  $n_2 - n_3 = i_4$
19.  $-n_2 = 2 i_4$
20.  $n_2 - n_3 = 2 i_4$
21.  $n_3 = 0$
22.  $n_3 = -36$

In each of the boxes below, enter the number of one of the equations above. **Enter the numbers in order, smallest first.**

1.

2.
  3.
  4.
  5.
  6.
  7.
- 

## Part 2: Solution

Solve the equations for the unknowns:

1.  $i_1 =$
2.  $i_2 =$
3.  $i_3 =$
4.  $i_4 =$
5.  $n_1 =$
6.  $n_2 =$
7.  $n_3 =$

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