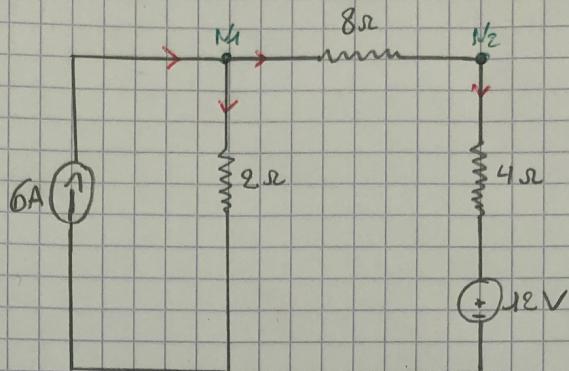


Travail 2 – Méthode des nœuds

Circuit



Calculs

$$N_1: 6 = \frac{v_1}{2} + \frac{v_1 - v_2}{8}$$

$$N_2: \frac{v_1 - v_2}{8} = \frac{12 - v_2}{4}$$

$$N_1: 6 = \frac{v_1}{2} + \frac{v_1}{8} - \frac{v_2}{8}$$

$$6 = \frac{4v_1}{8} + \frac{v_1}{8} - \frac{v_2}{8}$$

$$6 = \frac{5v_1}{8} - \frac{v_2}{8}$$

$$\frac{5v_1}{8} = \frac{12 + v_2}{8}$$

$$v_1 = \frac{12 + v_2}{5}$$

$$v_1 = \frac{12 + 12}{5} = 12$$

$$v_1 = 12 \text{ V}$$

$$N_2: \frac{48 + v_2}{40} - \frac{5v_2}{40} = \frac{12 - v_2}{4}$$

$$\frac{48 - 4v_2}{40} = \frac{120 - 10v_2}{40}$$

$$\frac{48 - 4v_2 - 120 + 10v_2}{40} = 0$$

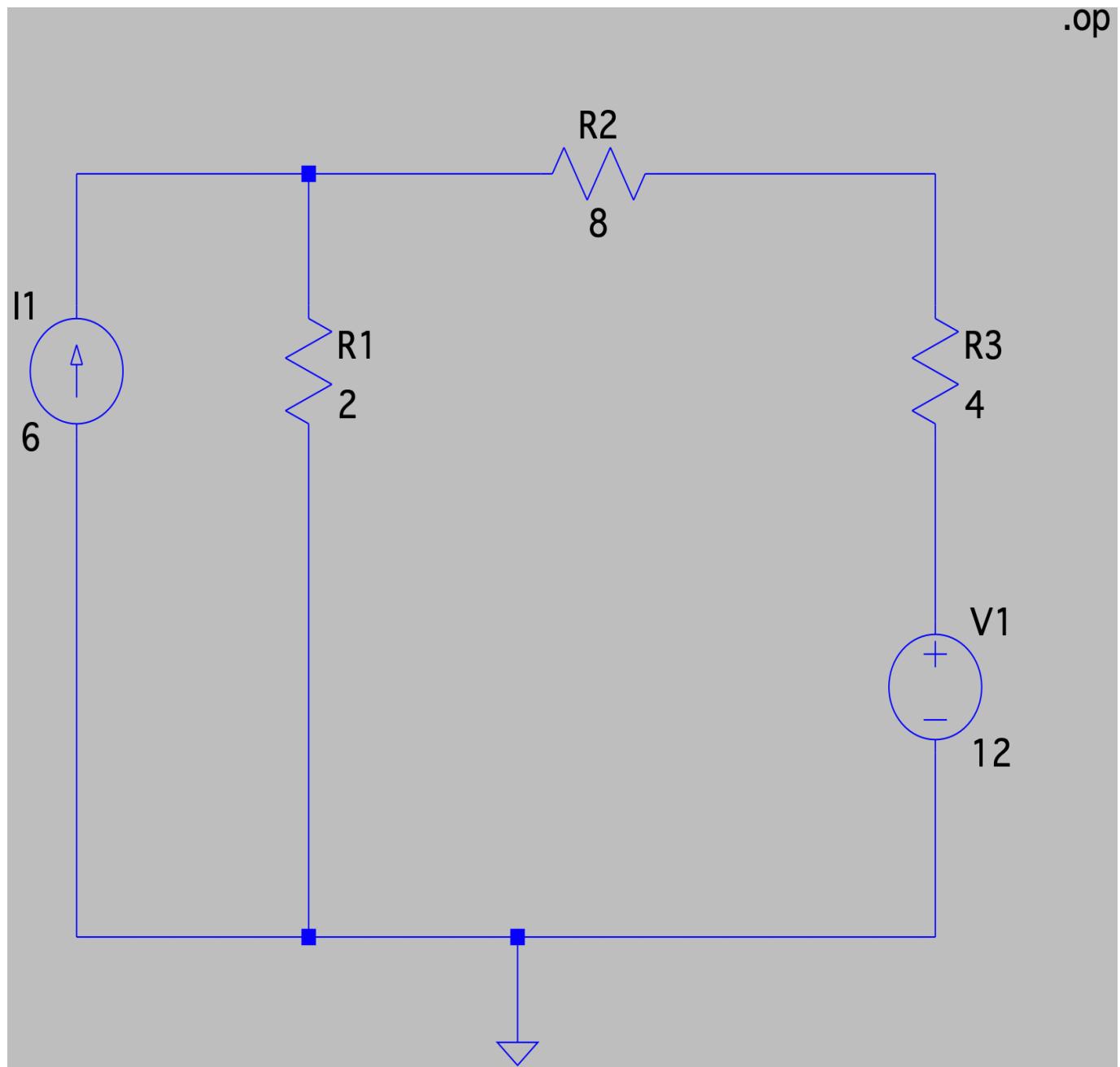
$$\frac{6v_2 - 72}{40} = 0$$

$$\frac{6v_2}{40} = \frac{72}{40}$$

$$v_2 = \frac{72}{6} = 12$$

$$v_2 = 12 \text{ V}$$

Circuit sur spice



Point de polarisation

```
    --- Expanded Deck Component Count ---
I's 1
R's 3
V's 1
tot: 5

    --- Expanded Netlist ---
*
i1 0 n001 6
r1 n001 0 2
r2 n002 n001 8
r3 n002 n003 4
v1 n003 0 12
.op
.end

Direct Newton iteration for .op point succeeded.
Operating Bias Point Solution:
V(n001)          12  voltage
V(n002)          12  voltage
V(n003)          12  voltage
I(I1)            6  device_current
I(R3)            0  device_current
I(R2)      -2.22045e-16  device_current
I(R1)            6  device_current
I(V1)            0  device_current

Date: Sat Feb 20 10:16:35 2021
Total elapsed time: 0.094 seconds.

tnom = 27
temp = 27
method = trap
totiter = 3
traniter = 0
tranpoints = 0
accept = 0
rejected = 0
matrix size = 4
fillins = 0
solver = Normal
Matrix Compiler1:      6 opcodes
Matrix Compiler2:      21 opcodes
```