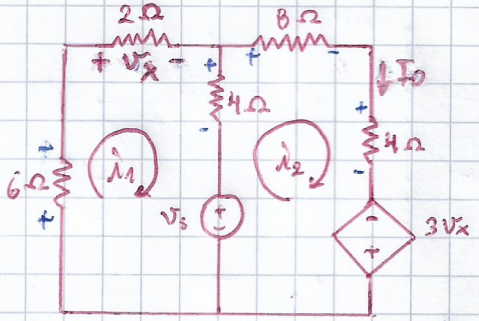
Ejemplo 4.1 Libro de Sadiku

Halle I_o cuando $v_s = 12[V]$ y $v_s = 24[V]$



$V_x = 2i_1$ $\quad I_o = i_2$

Malla 1.

$-6i_1 - 2i_1 - 4(i_1 - i_2) - v_s = 0$

① $12i_1 - 4i_2 + v_s = 0$

Malla 2

$4(i_1 - i_2) - 8(i_2) - 4(i_2) + 3v_x + v_s = 0$

$4i_1 - 16i_2 + 3v_x + v_s = 0$

② $10i_1 - 16i_2 + v_s = 0$

① $i_1 = \dfrac{4i_2 - v_s}{12}$

① en ②

$10\left(\dfrac{4i_2 - v_s}{12}\right) - 16i_2 + v_s = 0$

$20i_2 - 5v_s - 96i_2 + 6v_s = 0$

$i_2 = \dfrac{v_s}{76} = I_o$

$v_s = 12[V]$

$I_o = \dfrac{12}{76}[A]$

$v_s = 24[V]$

$I_o = \dfrac{24}{76}[A]$

$\therefore \; I_o(v_s = 24) = 2\, I_o(v_s = 12)$