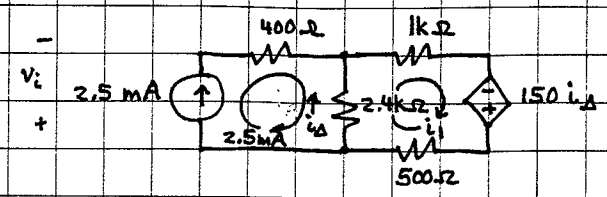
ex:



The mesh current for left loop = 2.5 mA from current source.

For the right loop: $150\, i_\Delta - i_1 \cdot 500\Omega - (i_1 - 2.5\text{mA})\,2.4\text{k}\Omega - i_1 \cdot 1\text{k}\Omega = 0\text{V}$

Constraint eq'n for i_Δ: $i_\Delta = i_1 - 2.5\,\text{mA}$. Use this in i_1 loop eq'n.

$$150\Omega(i_1 - 2.5\,\text{mA}) - i_1 \cdot 500\Omega - (i_1 - 2.5\,\text{mA})\,2.4\text{k}\Omega - i_1 \cdot 1\text{k}\Omega = 0\text{V}$$

$$\text{or}\quad i_1\,(150\Omega - 500\Omega - 2.4\text{k}\Omega - 1\text{k}\Omega) = 2.5\,\text{mA}\cdot(150\Omega - 2.4\text{k}\Omega)$$

$$\text{or}\quad i_1 = \frac{-2.5\,\text{mA}\cdot 2.25\text{k}\Omega}{-3.75\text{k}\Omega} = +1.5\,\text{mA}$$

a) We want i_Δ: $i_\Delta = i_1 - 2.5\,\text{mA} = 1.5\,\text{mA} - 2.5\,\text{mA} = -1\,\text{mA}$

b) Find pwr delivered by independent i-source: (i.e. 2.5 mA source)

pwr delivered $= -i \cdot v_i = -2.5\text{mA} \cdot v_i$ (see diagram)

v_i from loop V's sum to 0V: $-v_i - 2.5\text{mA}\cdot 400\Omega + i_\Delta\, 2.4\text{k}\Omega = 0\text{V}$ ($i_\Delta = -1\,\text{mA}$)

or $v_i = -2.5\,\text{mA}\cdot 0.4\text{k}\Omega - 1\,\text{mA}\cdot 2.4\text{k}\Omega = -1\,\text{V} - 2.4\,\text{V} = -3.4\,\text{V}$

pwr delivered $= -2.5\,\text{mA}\cdot(-3.4\text{V}) = 8.5\,\text{mW}$

c) Find pwr delivered by dependent source: (i.e. $150\, i_\Delta$)

pwr delivered $= i_1 \cdot 150\, i_\Delta = 1.5\,\text{mA}\cdot 150\Omega\,(-1\,\text{mA}) = -225\,\mu\text{W}$

pwr absorbed $=$ − pwr delivered $= 225\,\mu\text{W}$