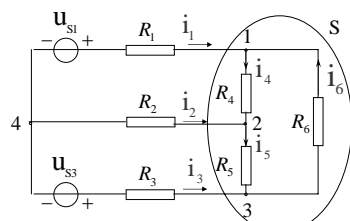


例 1-1



对1节点:  $i_1 + i_6 - i_4 = 0$  或  $i_1 + i_6 = i_4$

对2节点:  $i_2 + i_4 - i_5 = 0$

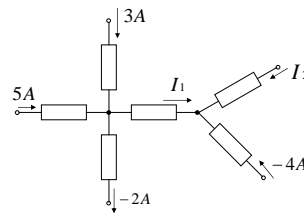
对3节点:  $i_3 + i_5 - i_6 = 0$

对闭合面S:  $i_1 + i_2 + i_3 = 0$



例1-2

求:  $I_1$   $I_2$



解: 法1

$$5 + 3 = I_1 - 2 \Rightarrow I_1 = 10A$$

$$I_1 + I_2 - 4 = 0 \Rightarrow I_2 = -6A$$

法2

$$5 + 3 - (-2) + I_2 + (-4) = 0$$

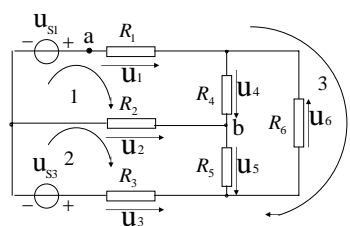
$$I_2 = -6A$$

$$-6 + (-4) + I_1 = 0$$

$$I_1 = 10A$$



例 1-3



对回路1:  $-u_{s1} + u_1 + u_4 - u_2 = 0$  或  $u_1 + u_4 = u_{s1} + u_2$

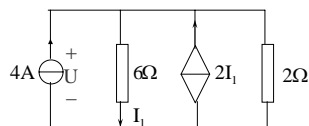
对回路2:  $u_2 + u_5 - u_3 + u_{s3} = 0$

对回路3:  $-u_{s1} + u_1 - u_6 - u_3 + u_{s3} = 0$

对假想回路:  $u_{ab} - u_2 - u_{s1} = 0$

3

例 1-4 求受控源输出功率



解: 设电压U

$$\text{由KCL: } 4 - I_1 + 2I_1 - \frac{U}{2} = 0$$

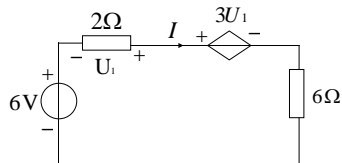
$$I_1 = \frac{U}{6}$$

$$U = 12V$$

$$P = 12 \times 2 \times \frac{12}{6} = 48W$$

4

例1-5 求I



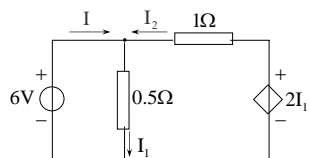
解: 由KVL  $-U_1 + 3U_1 + 6I - 6 = 0$

$$U_1 = -2I$$

$$I = 3A$$

5

例 1-6 求各电源的功率, 并判断是吸收还是发出功率



解: 设I, I2

由KVL  $I_2 + 0.5I_1 - 2I_1 = 0$

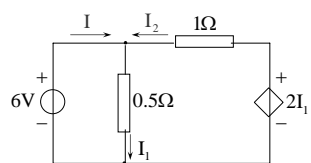
$$\Rightarrow I_2 = 18A$$

$$I_1 = \frac{6}{0.5} = 12A$$

由KCL  $I + I_2 - I_1 = 0$

$$\Rightarrow I = 6A$$

6



6V 电压源:  $P_1 = 6 \times (-6) = -36\text{W}$  吸收 36W

受控源:  $P_2 = 2I_1 I_2 = 2 \times 12 \times 18 = 432\text{W}$  发出 432W

校验:  $0.5 \times 12^2 + 1 \times 18^2 + 36 = 432\text{W}$

