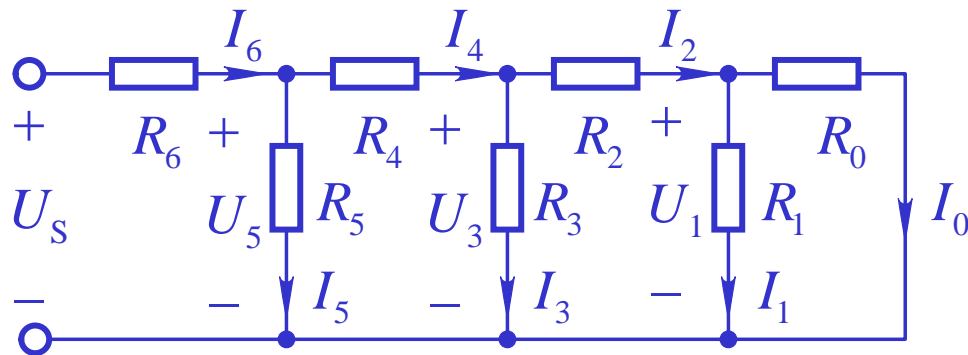


# 齐性定理

例1 图示电路中电阻 $R_0=R_2=R_4=R_6=4\Omega$ ,  $R_1=R_3=R_5=8\Omega$ 。(1)若使 $I_0 = 1\text{A}$ , 求  $U_S$  的值。(2)若  $U_S = 66\text{V}$ , 求各支路电流。



$$I_3 = \frac{U_3}{R_3} = \frac{R_2 I_2 + R_1 I_1}{R_3} = 1.25\text{A}$$

$$I_4 = I_2 + I_3 = 2.75\text{A}$$

$$I_5 = \frac{U_5}{R_5} = \frac{R_4 I_4 + R_3 I_3}{R_5} = 2.625\text{A}$$

$$I_6 = I_4 + I_5 = 5.375\text{A}$$

$$U_S = R_6 I_6 + R_5 I_5 = 42.5\text{V}$$

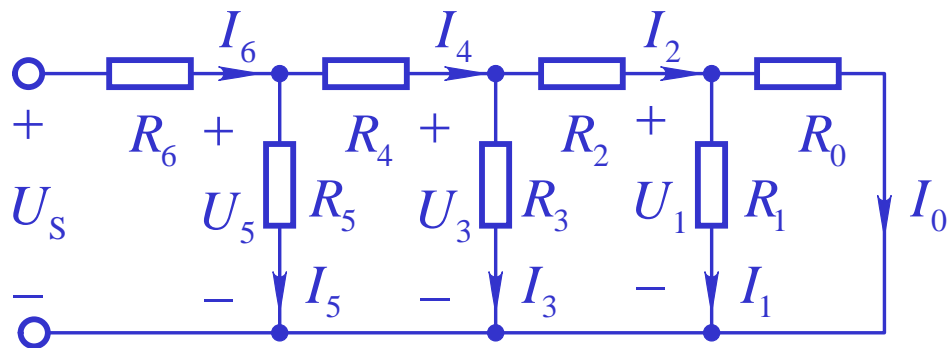
解  $I_0 = 1\text{A}$

$$I_1 = \frac{U_1}{R_1} = \frac{R_0 I_0}{R_1} = 0.5\text{A}$$

$$I_2 = I_1 + I_0 = 1.5\text{A}$$

# 齐性定理

$U_S = 66V$  时是42.5V的1.553倍，所以电路中所有的电压、电流均应该增大1.553倍，据此可以求出电路中其它各处电压电流。



$$k = \frac{66V}{42.5V} = 1.553$$

$$I'_1 = kI_1 = 1.553 \times 0.5 = 0.776A$$

$$I'_2 = kI_2 = 1.553 \times 1.5 = 2.33A$$

$$I'_3 = kI_3 = 1.94A$$

$$I'_4 = kI_4 = 4.27A$$

$$I'_5 = kI_5 = 4.08A$$

$$I'_6 = kI_6 = 8.35A$$