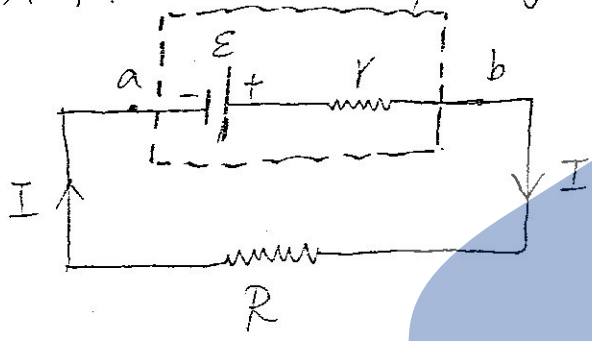
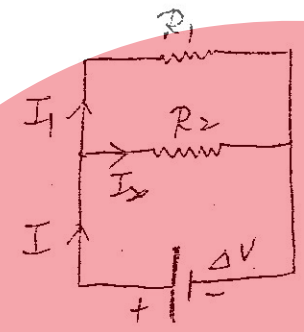


§18.1 Sources of emf



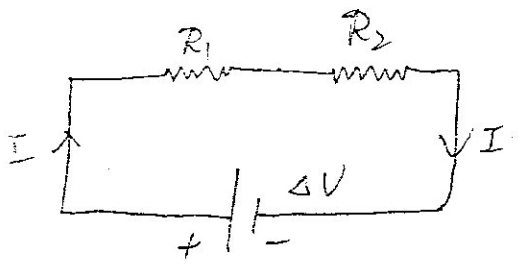
端电压 $\Delta V = V_b - V_a$
 $\Delta V = \text{电动势 } \varepsilon - I r$
 $\varepsilon = I R + I r$
 $I = \frac{\varepsilon}{R + r}$
 $I \varepsilon = I^2 R + I^2 r$

§18.3 Resistors in Parallel
电阻 并联



$I_1 = \frac{\Delta V}{R_1}$ $I_2 = \frac{\Delta V}{R_2}$
 $I = \frac{\Delta V}{R_{eq}}$
 $I = I_1 + I_2$
 $\frac{\Delta V}{R_{eq}} = \frac{\Delta V}{R_1} + \frac{\Delta V}{R_2}$
 $\frac{1}{R_{eq}} = \frac{1}{R_1} + \frac{1}{R_2}$

18.2 Resistors in Series
电阻 串联



$\Delta V = I R_1 + I R_2 = I (R_1 + R_2)$
 $\Delta V = I R_{eq}$
 $R_{eq} = R_1 + R_2$

Example 18.2

Example 18.1

Example 18.3

§ 18.4 Kirchhoff's Rules and Complex DC Circuits

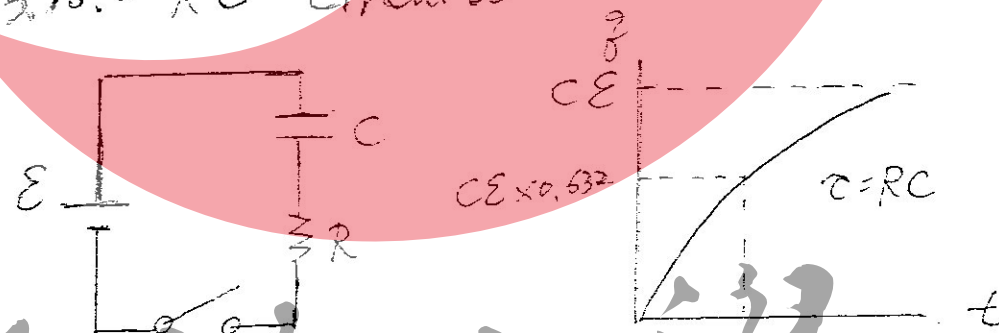
基希荷夫定律

Kirchhoff's rules:

1. The sum of the currents entering any junction must equal the sum of the currents leaving that junction. (This rule is often referred to as the junction rule.)
2. The sum of the potential differences across all the elements around any closed-circuit loop must be zero. (This rule is usually called the loop rule.)

Example 18.4

§ 18.5 RC Circuits

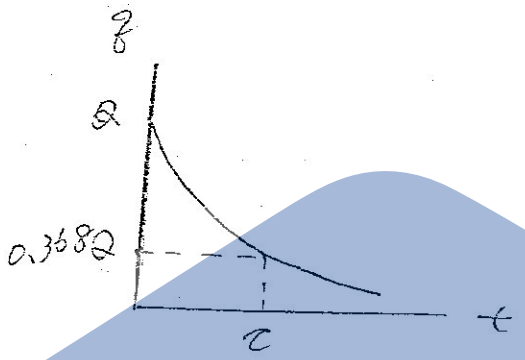
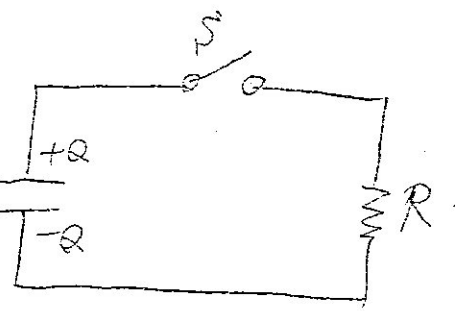


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$$Q = Q(1 - e^{-t/RC})$$

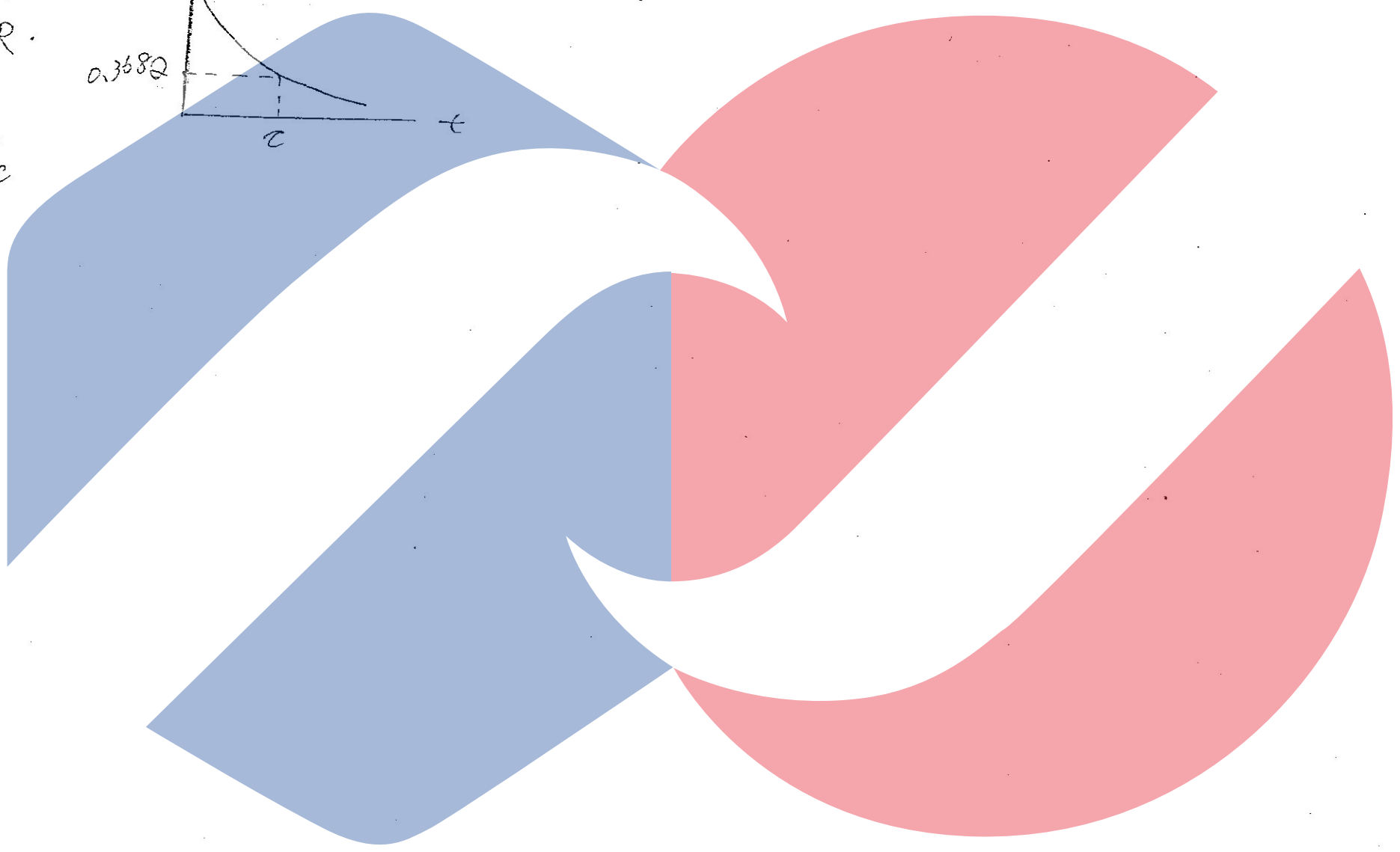
$$\Delta V = \frac{Q}{C}$$

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time constant $\tau = RC$



$$q = Q e^{-t/\tau}$$

Example 18.5



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