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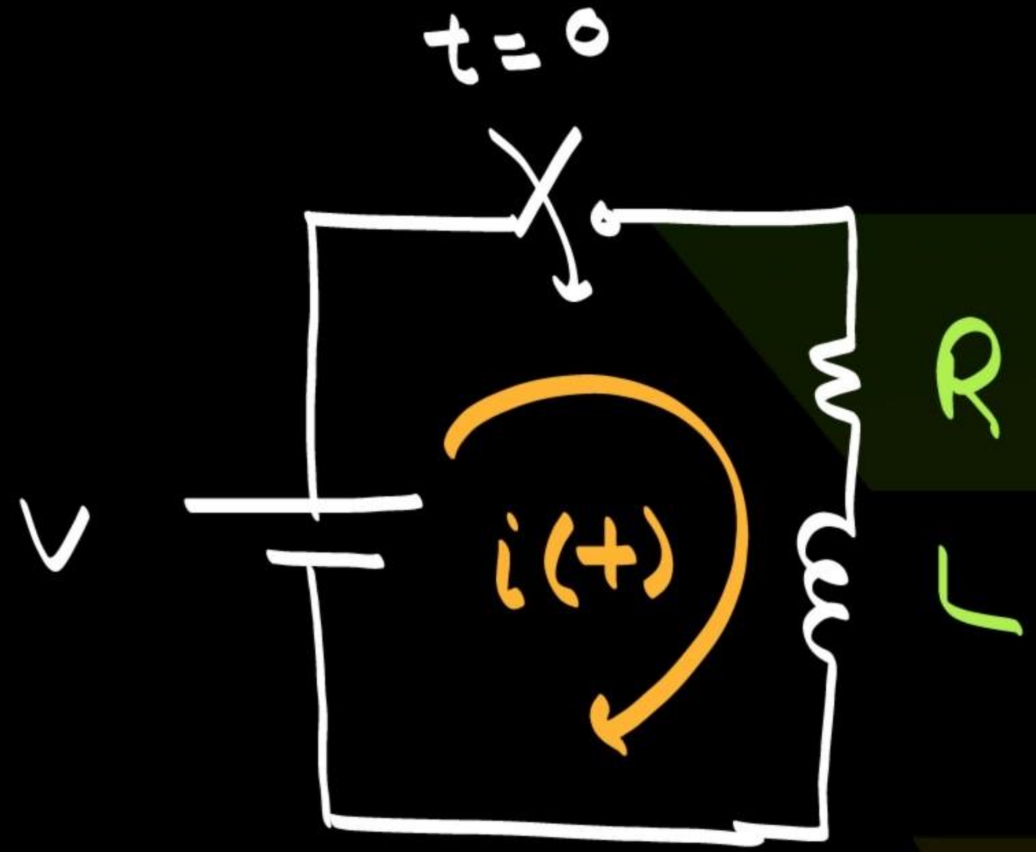
DC transients

Transients present in any circuit due to
change in source magnitude or load elem
and it Contains energy storing elemen

Energy storing Element → Inductor →

Case study

Case - I



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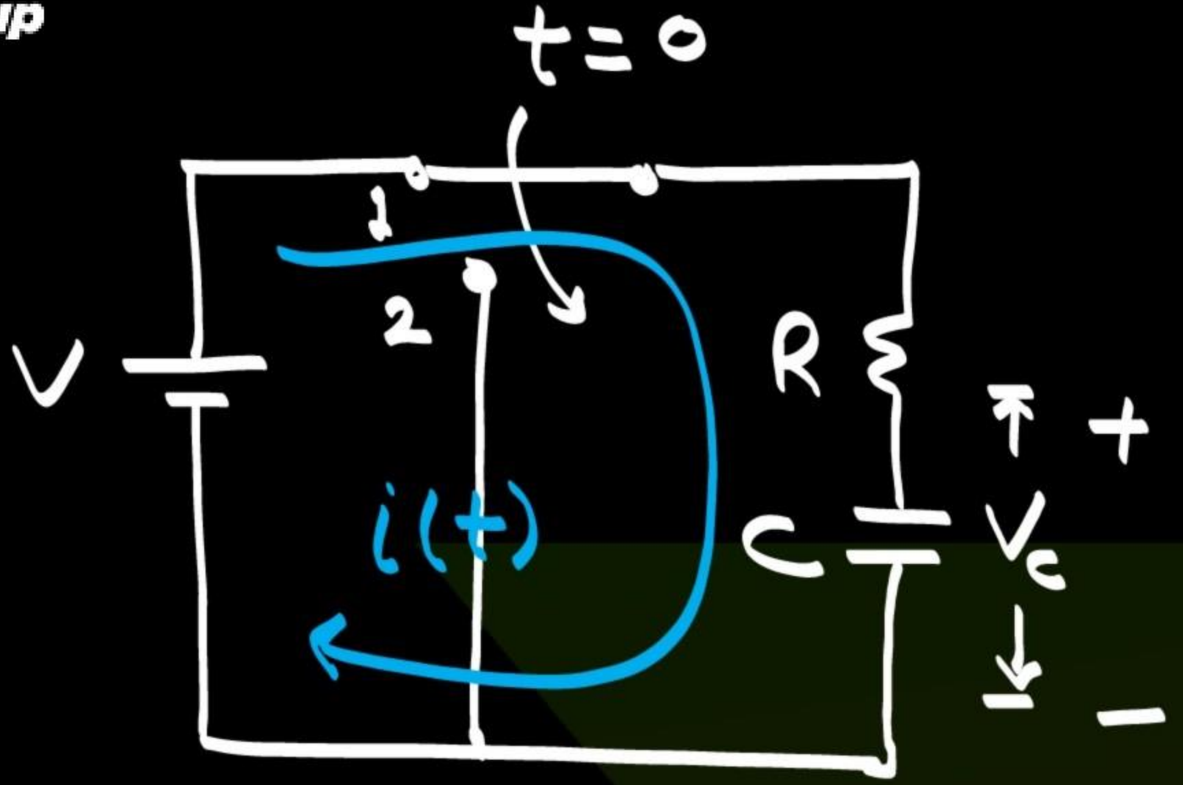
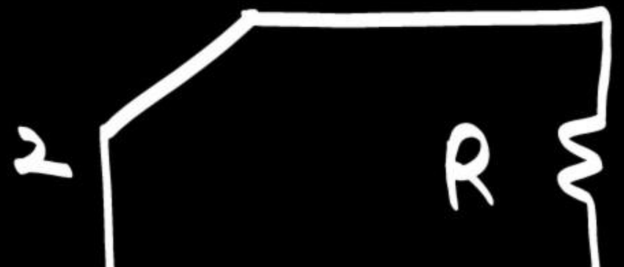
Case-IV





At $t=0^-$, $V_c(t) = V$

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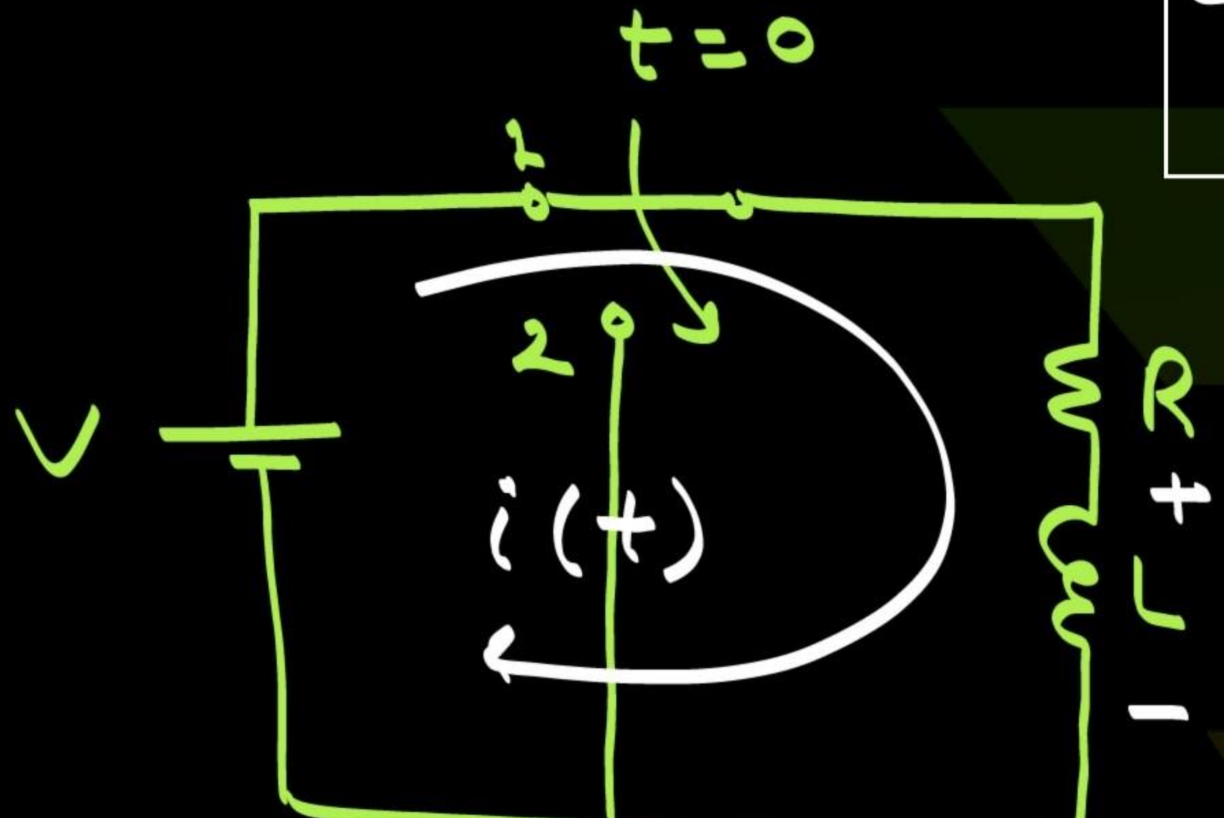
Case - I

Source free RL Circuit

Discharging of Inductor



At $t = 0^-$

$i(t) = I_0$

$t = 0^+$,

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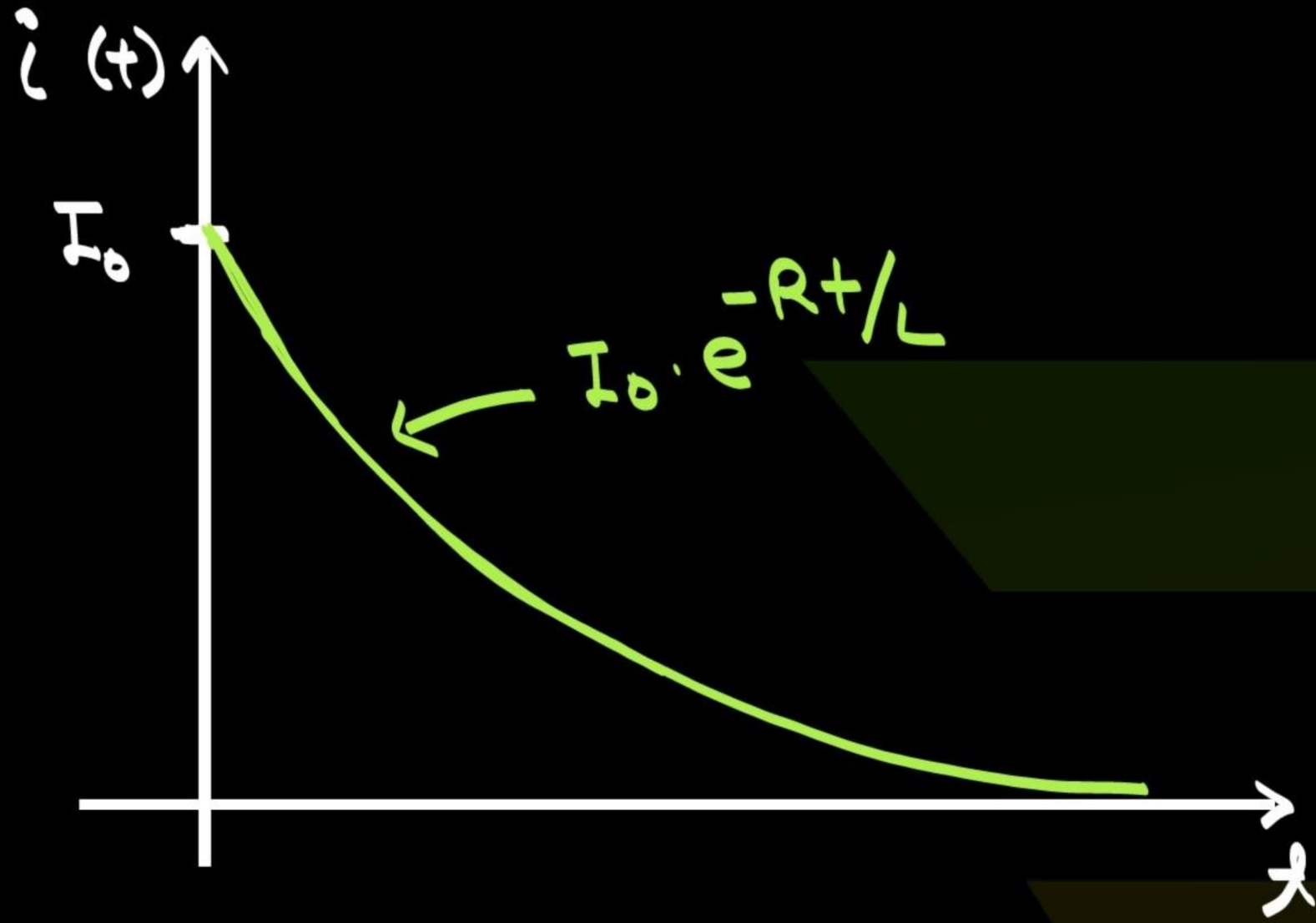
Voltage



$V_L =$

=

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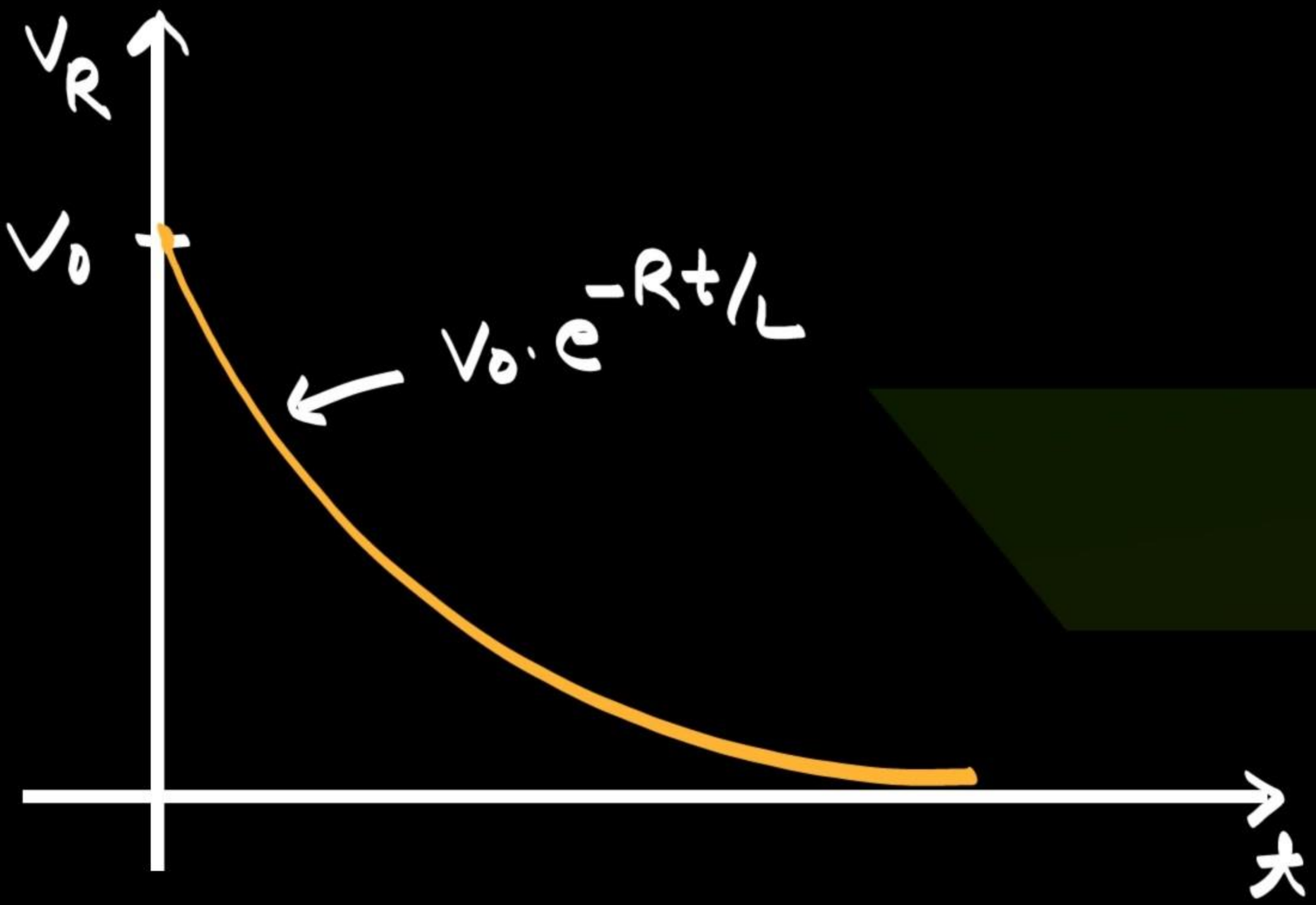
Case-II



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C.F. → transient response →

$$\frac{di}{dt} + \frac{R}{L} \cdot i = 0 .$$

After solving this.

$$i(t) = A \cdot e^{-Rt/L} \longrightarrow (1)$$

A → Constant

$i(t) =$

$i(t) =$

At t

t

t

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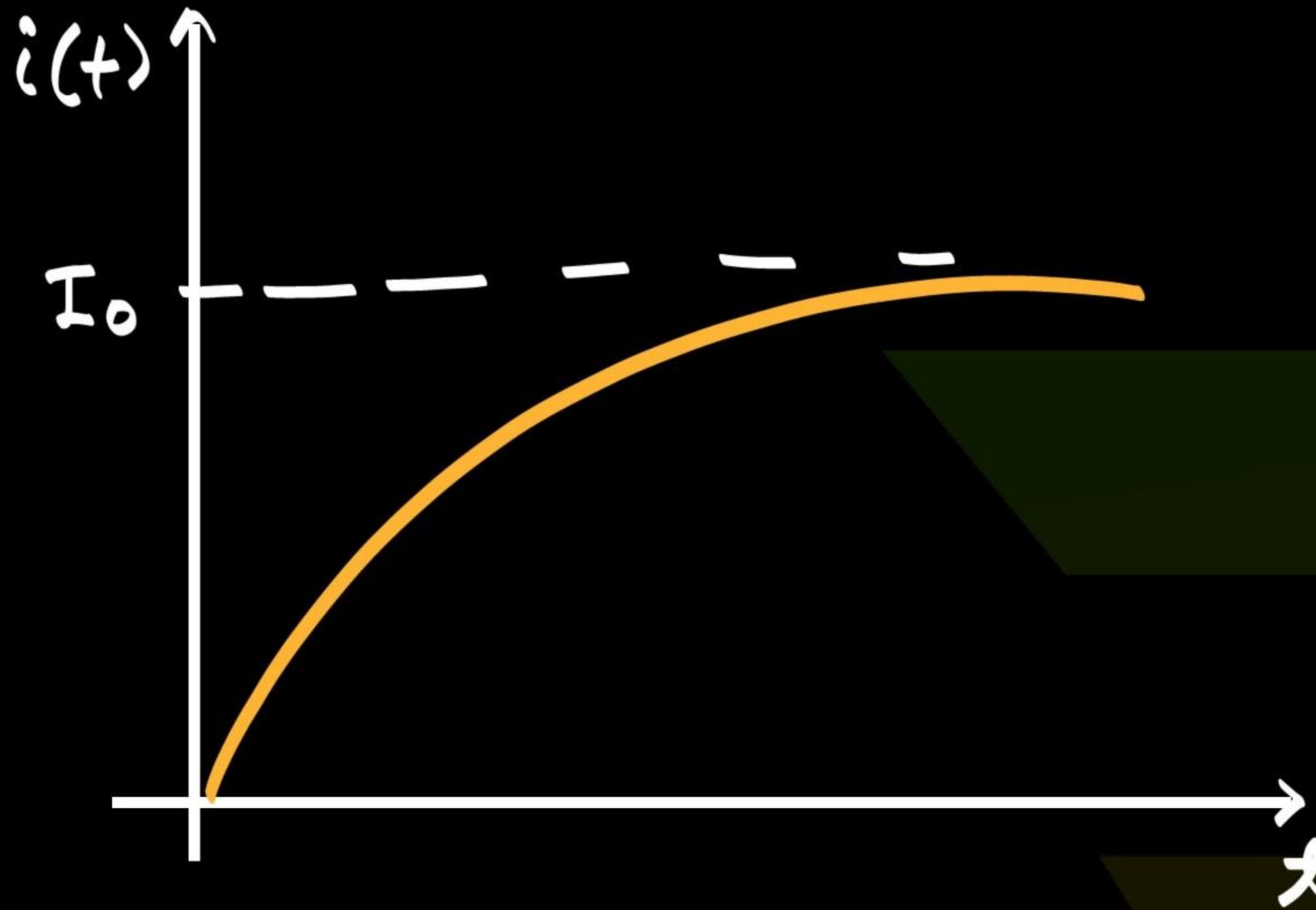

Voltage a

$V_R = R$

$V_R = R \cdot I$

$V_R = V_0 \cdot ($