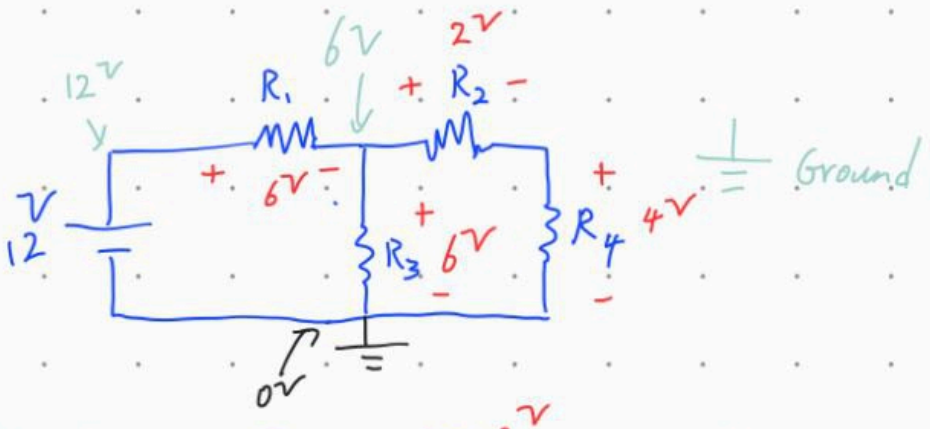
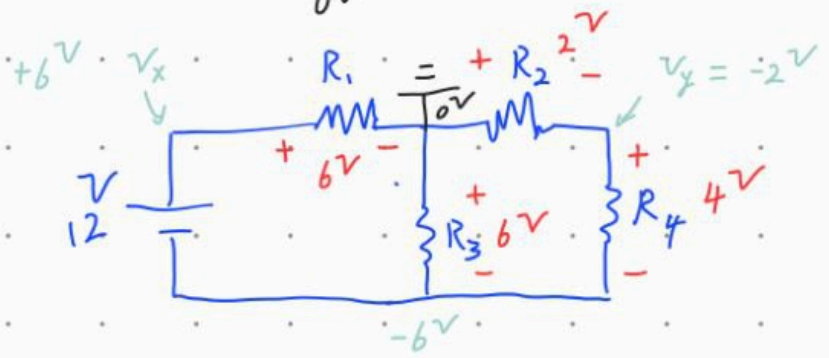
Lecture 1



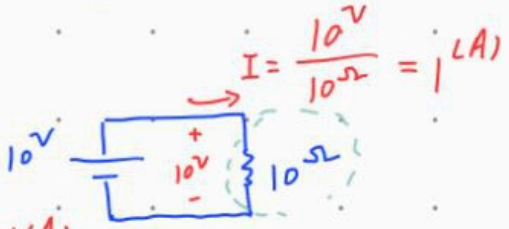


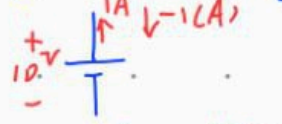
$0-(-6^V)=+6^V$

Electric Power:

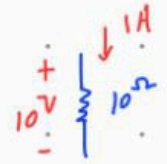
$$P=\frac{dw}{dt}=\frac{dw}{dq}\cdot\frac{dq}{dt}=v(t)\cdot i(t)$$

$$\begin{cases} i(t)=\dfrac{dq}{dt} \\ v(t)=\dfrac{dw}{dq} \end{cases}$$

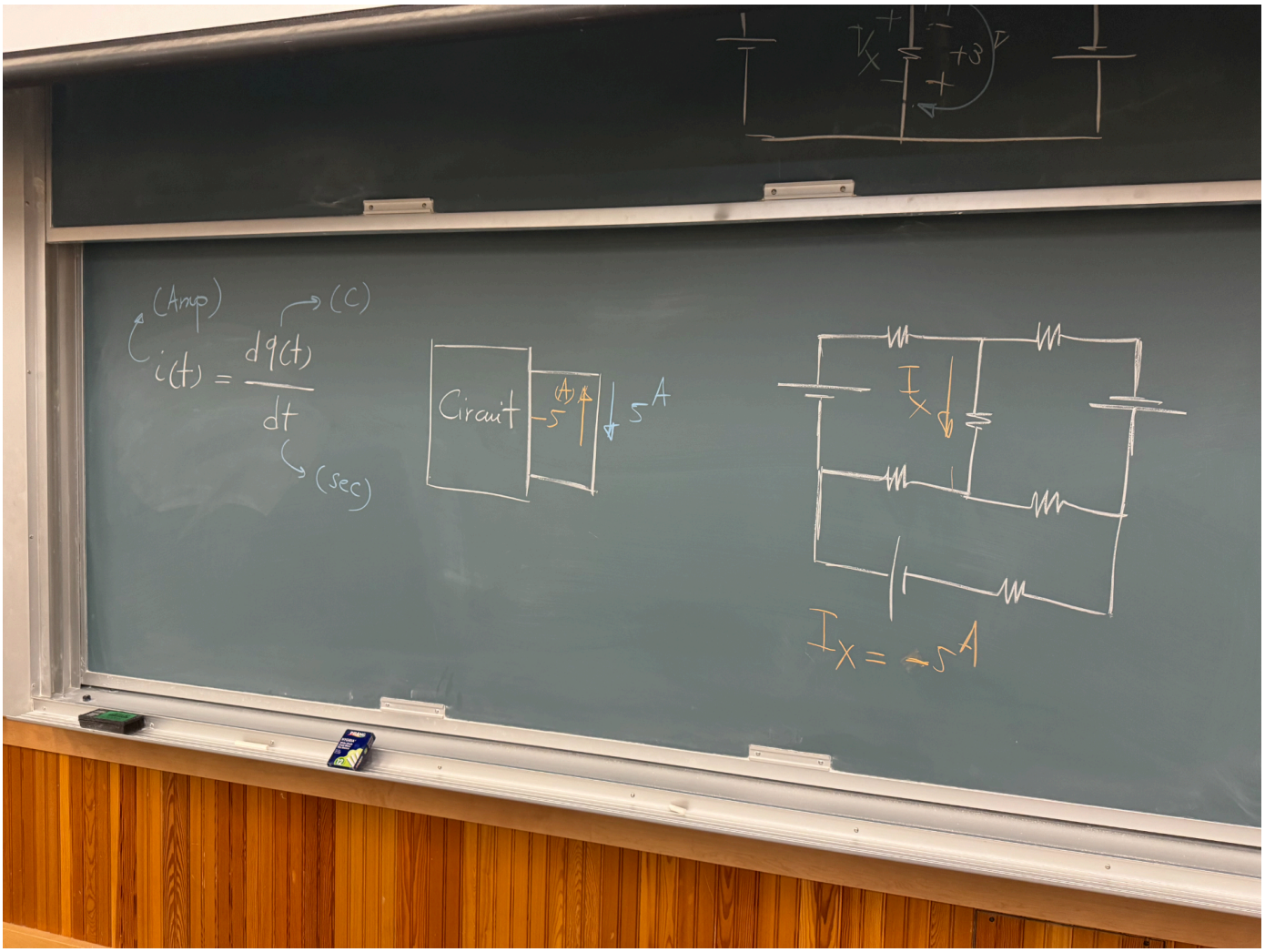


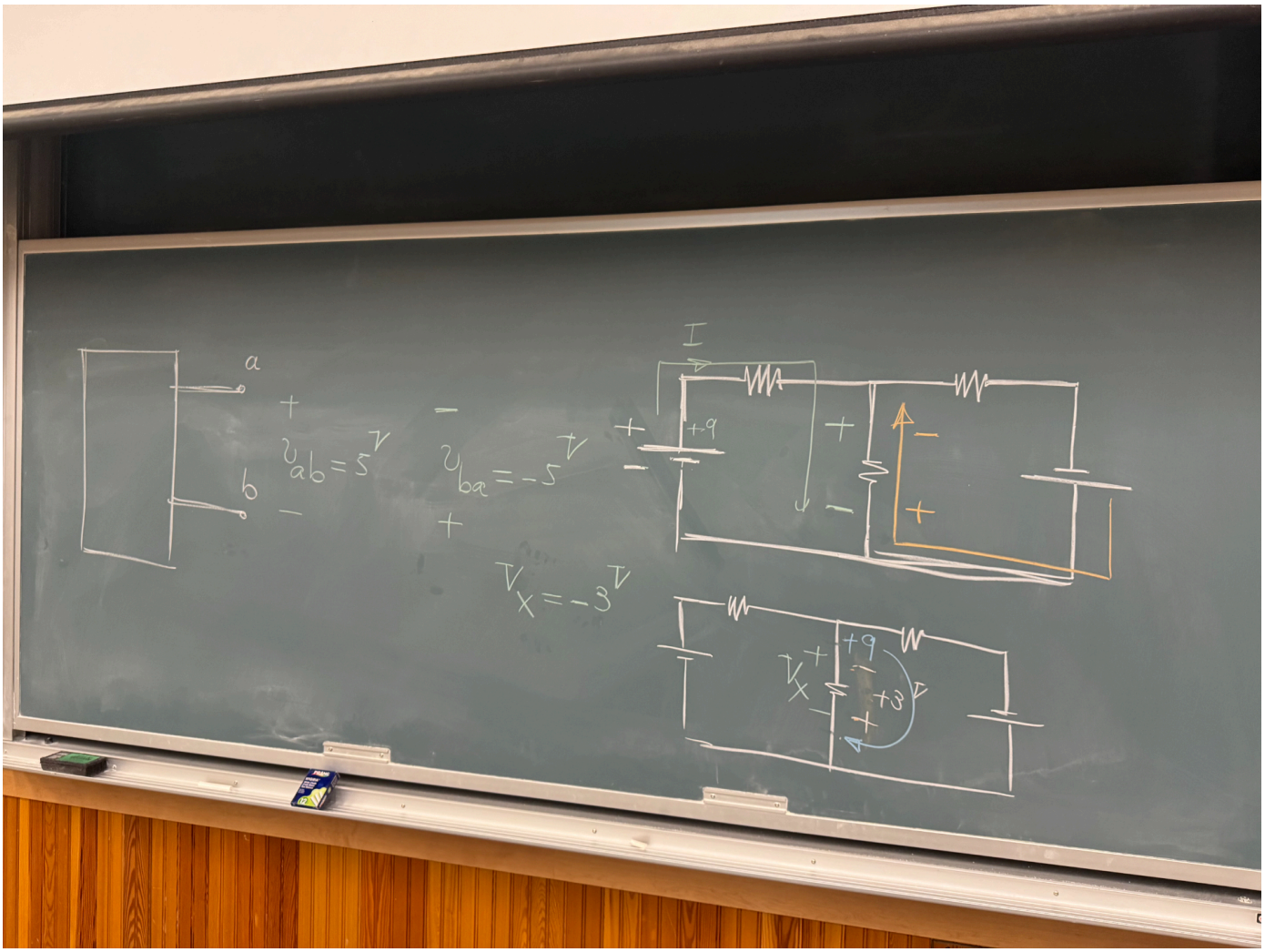


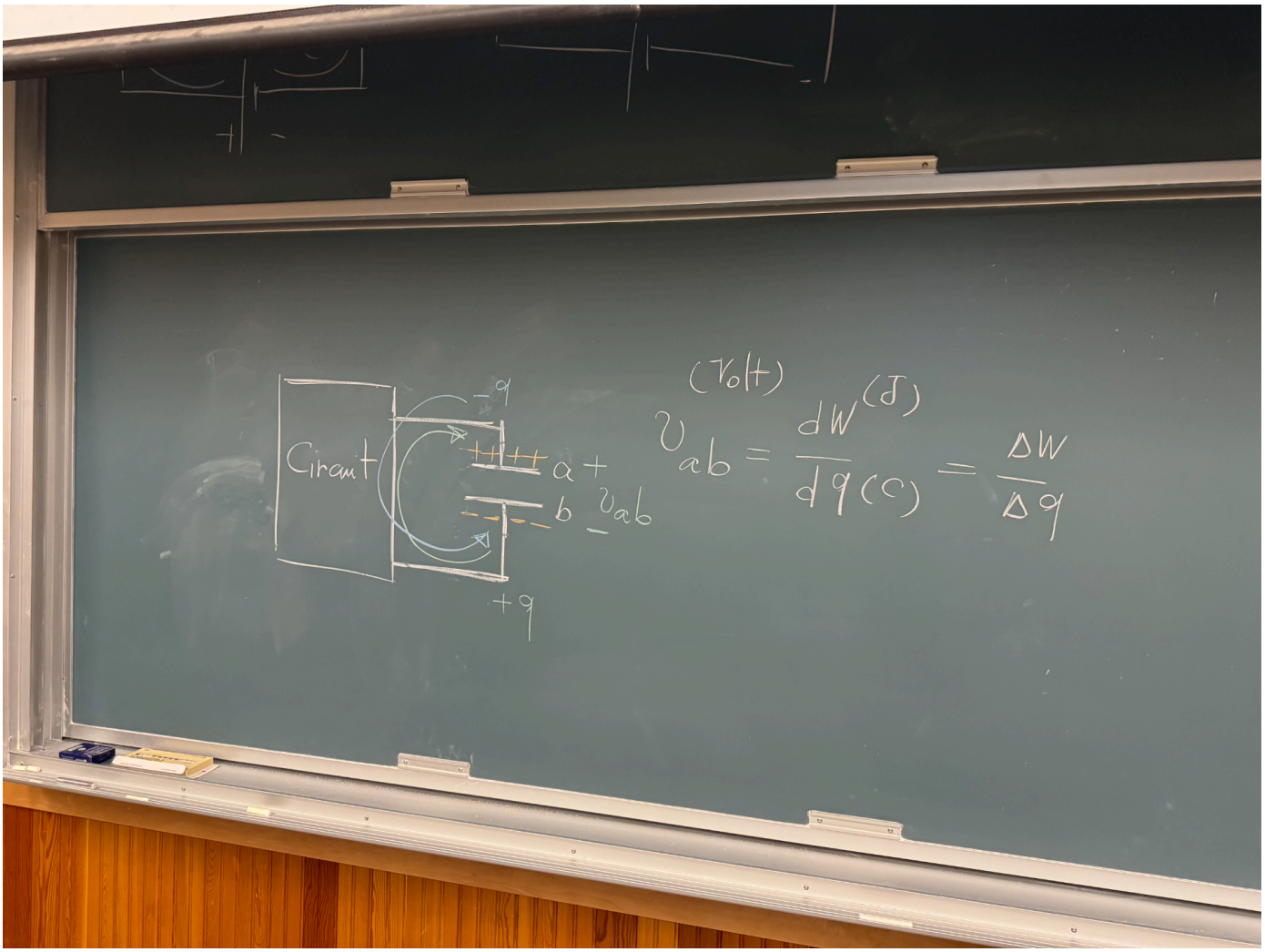
$P=10^V\times -1^A=-10^{Watt}$

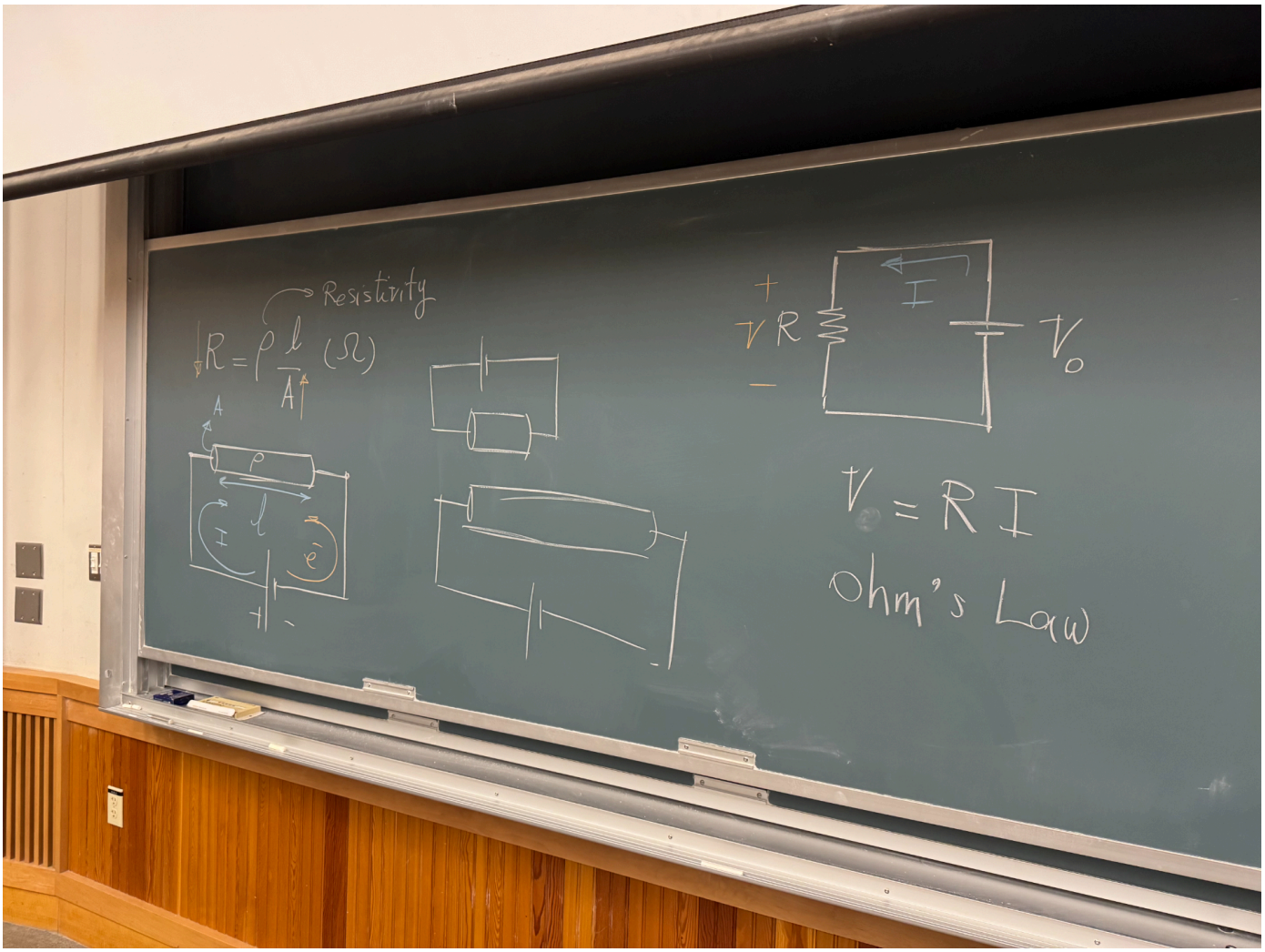


$P=10^V\times 1^A=10^W$


(Amp)
(C)
$i(t) = \frac{dq(t)}{dt}$
(sec)
Circuit
-5
(A)
5A
I_x
$I_x = -5A$


a
b
+
−
$v_{ab} = 5\,V$
$v_{ba} = -5\,V$
$V_x = -3\,V$
I
+9
+9
V_x
+3 V


Circuit
-q
a +
b -
v_{ab}
+q
(Volt)
$v_{ab} = \frac{dW^{(J)}}{dq(C)} = \frac{\Delta W}{\Delta q}$


Resistivity
$R = \rho \frac{l}{A}$ (Ω)
A
ρ
l
I
e⁻
+
−
+
V
R
−
I
V_0
$V_0 = R I$
Ohm's Law