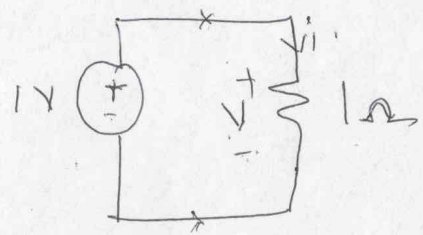
lecture 2 - class notes

Eg: Find voltage (v) across & current (i) through the resistor.

Note: Units of Resistance: ohms

Symbol: Ω (uppercase) ω (lowercase)

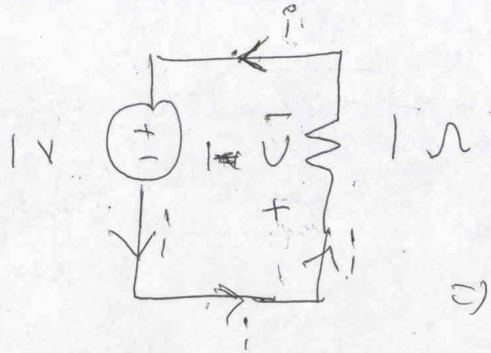


Sol: $\boxed{v = 1\ V}$

$v = iR \Rightarrow (1) = (i)(1\,\Omega)$

$\Rightarrow \boxed{i = 1\ A}$

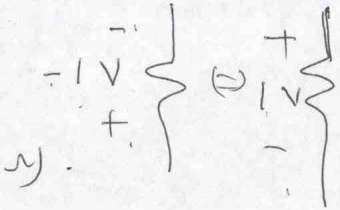
Eg 2: Find V & i :



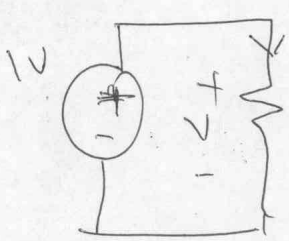
$\boxed{V = -1\ V}$

$V = iR$

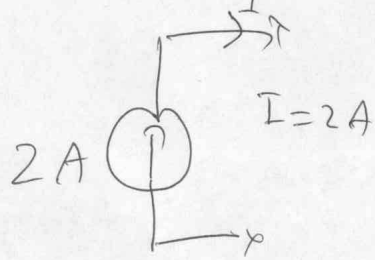
$\Rightarrow (-1) = (i)(1\Omega)$.



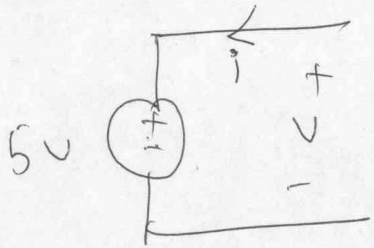
$\Rightarrow \boxed{i = -1\ A}$



$\boxed{\begin{array}{l} V = 1\ V \\ i = 1\ A \end{array}}$

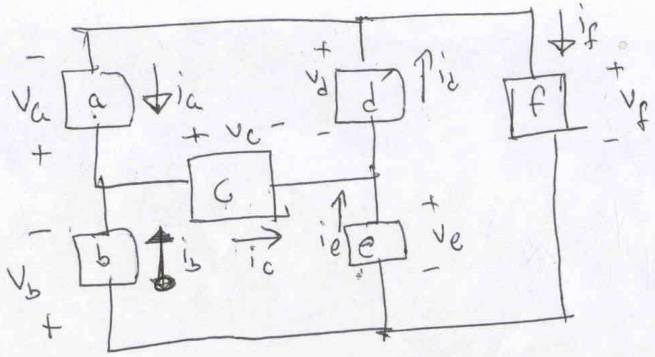


P:



$V = 5\ V$

(1-26)



(Q:) Find if the circuit is valid

i.e. is

$P_{absorbed} = P_{dissipated}$

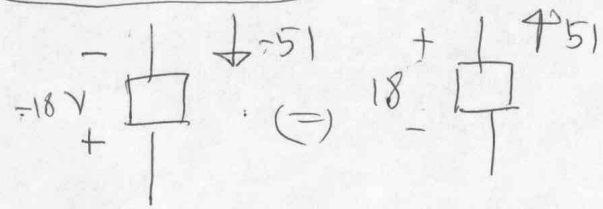
Element	Voltage (V)	Current (A)
a	−18	−51
b	−18	−45
c	2	−6
d	20	−20
e	16	−14
f	36	31

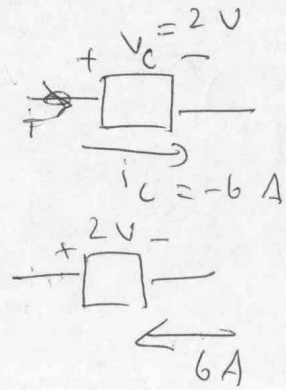
Releasing

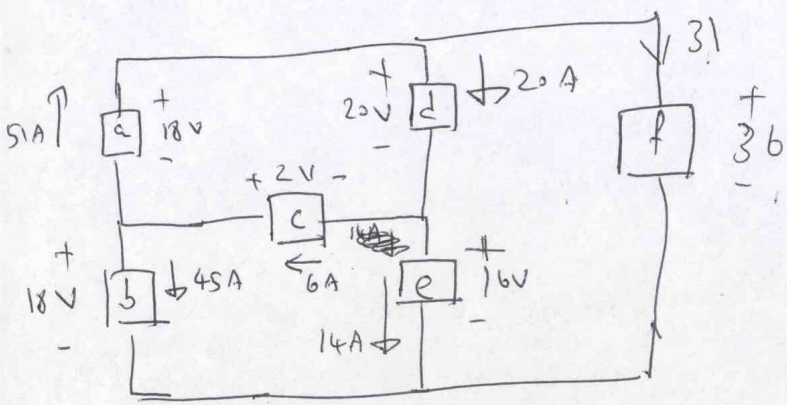
a: $V_a i_a$
$= (-18)(-51)$
$= 918\ W$

Absorbing

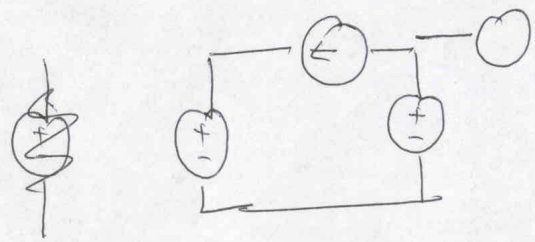
c: $V_c i_c$
$= (2)(-6)$
$= -12\ W$







Releasing	Absorbing
(a) (18)(51) = 918 W	(b) (18)(45) = 810 W
(c) (2)(6) = 12 W	(d) (20)(20) = 400 W
	(e) (16)(14) = 224 W
	(f) (31)(36) = 1116 W

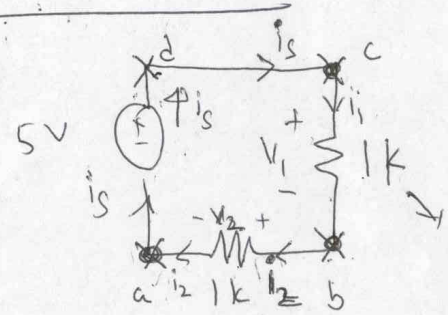


Skip 2.5 ← YOU READ IT!

Eg 2.5 ← related to HW #2.17

look at eg. 2.9

Kirchoff's laws



means 1 kΩ
‖
1000 Ω

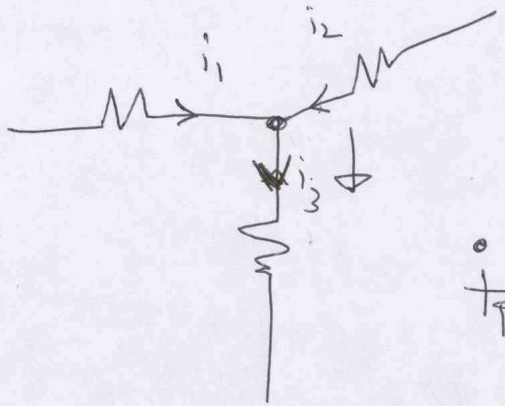
Solving a circuit → we find every unknown voltage & current.

node ≜ a point in the circuit where two or more elements meet.

$V_1 = (i_1)(1\,k\Omega)$

$V_2 = (i_2)(1\,k\Omega)$

. . Kirchoff's current law: Algebraic sum of currents at (KCL) any node is zero.



Current entering: +ve

$\Downarrow$

means positive

Current leaving: −ve

$$\cancel{i_1 + i_2 - i_3 = 0}$$

$$i_1 + i_2 + (-i_3) = 0$$

$$\Rightarrow \boxed{i_1 + i_2 = i_3}$$