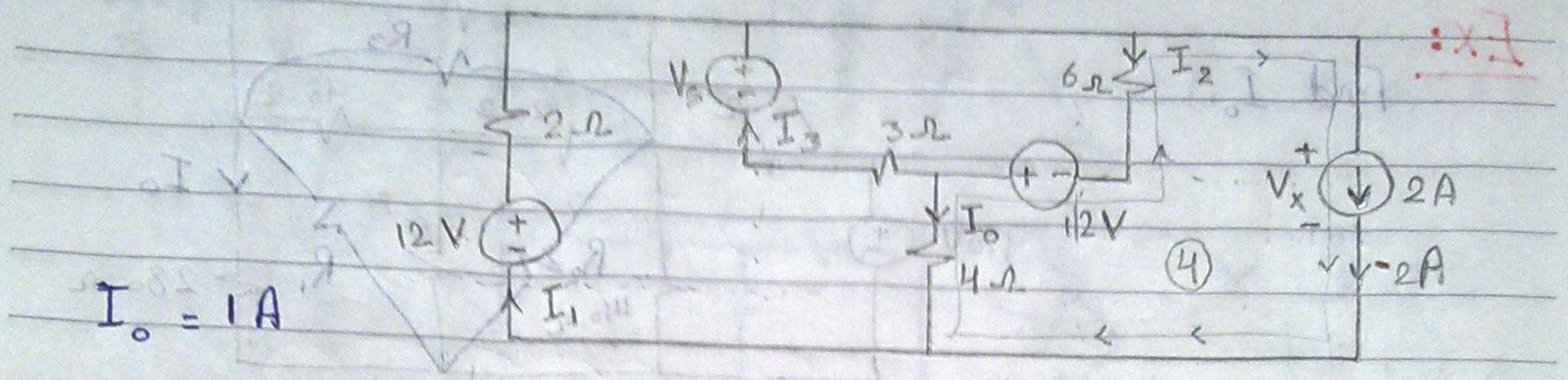


$I_o = 1A$

$I_1 = 3A$ ، $I_2 = 7/3\ A$ ، $I_3 = 4/3$ ، $V_5 = 6V$

K.V.L For loop ④

$$\sum V_{rise} = \sum V_{drop}$$

$$0 = -4(I_o) + 12 - 6(I_2) + V_x$$

$V_x = 6V$ ⟸

Power balance ( )

$$P \Longrightarrow \text{watt} \Longrightarrow P = VI$$

* For resistance $V = IR$

R ⟹ $P = VI = I^2R = \frac{V^2}{R}$

⟹ $P = VI$

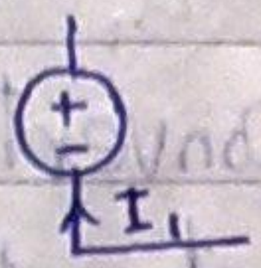
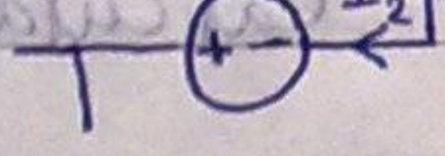
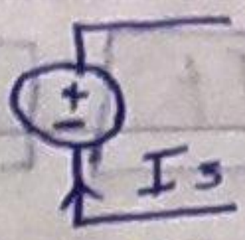
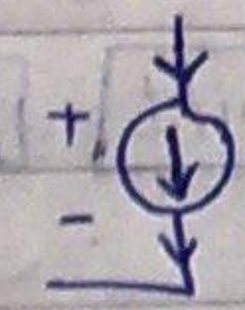
⟹ $P = VI$

R ⟹ Consume Power

I ⟹ Consume Power

I ⟹ Supply Power

• For the Example

element	Power (watt)	Consume or supply
2 Ω	$2*(3)^2=18$	Consume
3 Ω	$3*(\frac{4}{3})^2=\frac{16}{3}$	Consume
4 Ω	$4*(1)^2=4$	Consume
6 Ω	$6*(\frac{7}{3})^2=\frac{98}{3}$	Consume
12 V 	$12*3=36$	Supply
12 V 	$12*\frac{7}{3}=28$	Supply
$V_s=6V$ 	$6*\frac{4}{3}=8$	Supply
$V_x=6V$ 	$6*2=12$	Consume

Complex numbers

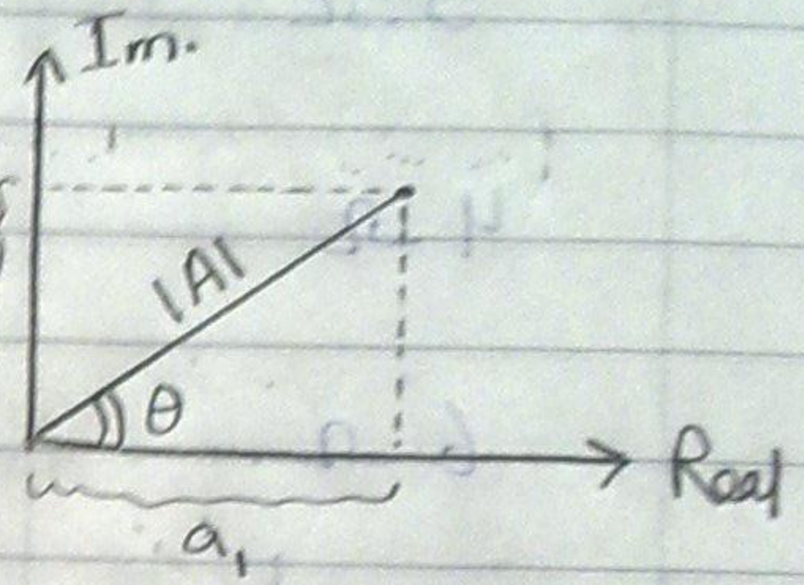
$A = a_1 + j\,a_2$ → Rect. Form

$A = |A| \angle\theta$ → Polar Form

i.e

$A = 3 + j4$ Rect. Form

$A = 5 \angle 53.13$ Polar Form



Rec	Polar
3	$3\angle 0$
-3	$3\angle \pm 180$
$j3$	$3\angle 90$
$-j3$	$3\angle -90$
$-3-j3$	$3\sqrt{2}\angle 45$

To convert From Rect. to Polar on Calculator

a_1

Shift + (-) real no.

⇒ Shift 2 7 a_2 Im. no.

* $B + A$
* $B - A$

} addition or sub. as Rect. Form

* $B * A = |A| \angle\theta_1 \quad |B| \angle\theta_2 = |AB| \angle\theta_1 + \theta_2$

* $\frac{B}{A} = \frac{|B| \angle\theta_2}{|A| \angle\theta_1} = \left|\frac{B}{A}\right| \angle\theta_2 - \theta_1$