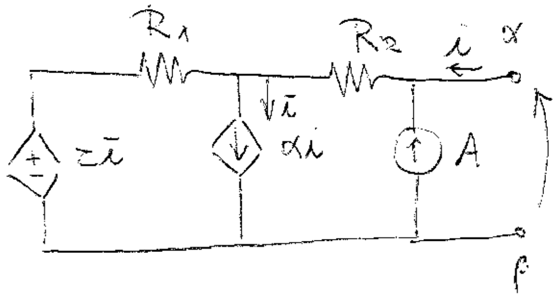
## Es.1




$$V - R_2(i+A) - R_1(i+A-\alpha i) - z\alpha i = 0$$

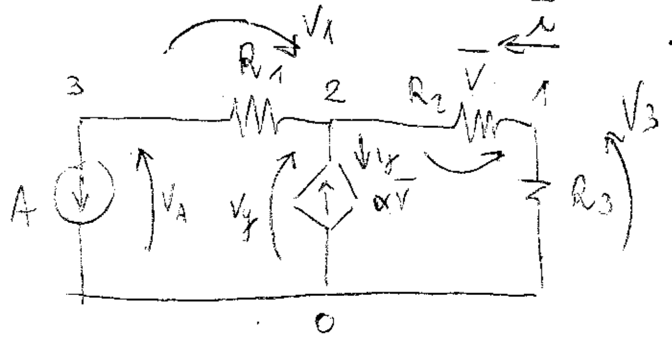
$$i\left(R_2 + R_1(1-\alpha) + z\alpha\right) = V - (R_1+R_2)A$$

$$i = \frac{V}{R_2+R_1(1-\alpha)+z\alpha} - \frac{R_1+R_2}{R_1+R_1(1-\alpha)+z\alpha} \cdot A$$

$$R_2 + R_1(1-\alpha) + z\alpha \neq 0$$

$$[\alpha] = \Omega^{-1}$$

## Es.2




$\bar V = u_1 - u_2$ $\qquad \bar i = \dfrac{u_1-u_2}{R_2}$

$V_3 = u_1$ $\qquad i_3 = u_1/R_3$

$V_1 = u_2 - u_3$ $\qquad i_1 = \dfrac{u_2-u_3}{R_1}$

$V_A = u_3$ $\qquad i_A = A$

$V_g = u_2$ $\qquad i_g = -\alpha\,(u_1-u_2)$

※3 $\dfrac{u_2-u_3}{R_1} = A$ $\qquad u_2 = R_1 A + u_3$

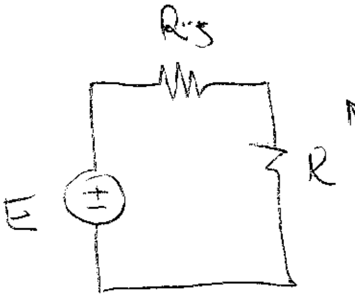
$(u_1-u_2)\left(\dfrac{1}{R_2}+\alpha\right) = A$ $\qquad u_1-u_2 = \dfrac{R_2 A}{1+\alpha R_2}$

※2 $\underbrace{\dfrac{u_2-u_3}{R_1}}_{A} + (u_1-u_2)(-\alpha) = \dfrac{u_1-u_2}{R_2}$

$$u_1 = -\frac{R_3\cancel{R_2}A}{1+\alpha R_2}\,\frac{1}{\cancel{R_2}}$$

※1 $\dfrac{u_1-u_2}{R_2} + \dfrac{u_1}{R_3} = 0$ $\qquad R_3(u_1-u_2)+R_2 u_1 =$

$$u_1 = \frac{R_3 u_2}{R_2+R_3}$$

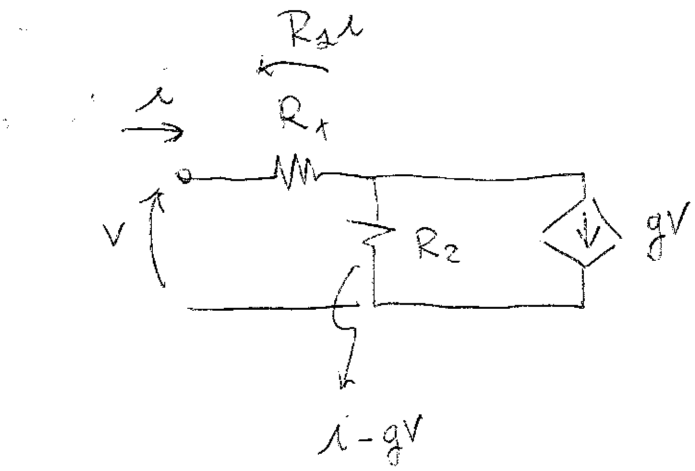



$$i = \frac{E}{R_s+R}$$

$$P_a^R = \frac{R E^2}{(R_s+R)^2} \qquad \frac{d}{dR} P_a^R = \frac{E^2}{(R_s+R)^2} + -2\frac{RE^2}{(R_s+R)^3} =$$

$$= \frac{E^2\left(R_s + R \cancel{-2R}^{\,-R}\right)}{(R_s+R)^3} = 0$$

$$\boxed{\text{se } R_s = R}$$




$$1 + R_2 g \neq 0$$

$$V - R_1 i - R_2(i - gV) = 0$$

$$V + R_2 g V = (R_1 + R_2) i$$

$$V = \frac{R_1+R_2}{1+R_2 g} i$$

$$\boxed{\begin{array}{c} R \\ \hline \dfrac{R_1+R_2}{1+R_2 g} = R_s \end{array}}$$

$$R_1 + R_2 = R_s(1 + R_2 g)$$

$$\left(\frac{R_1+R_2}{R_s} - 1\right)\frac{1}{R_2} = g$$