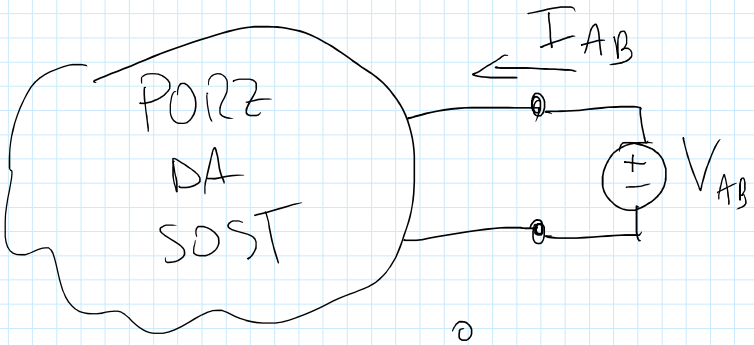
TEOREMA DI NORTON

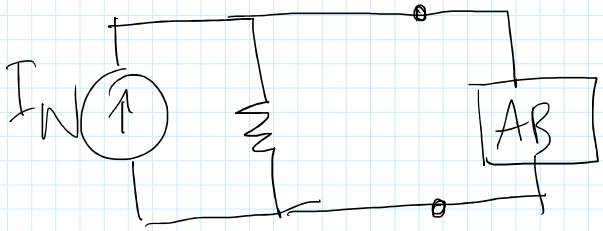


$$I_{AB} = I'_{AB} + I''_{AB} \quad \text{(PSE)}$$

I'_{AB} = SOLO ECC. INTERNE

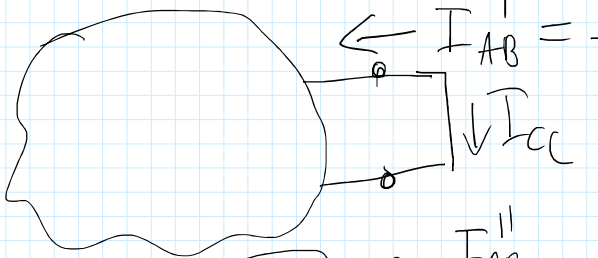
I''_{AB} = SOLO ECC ESTERNE

=

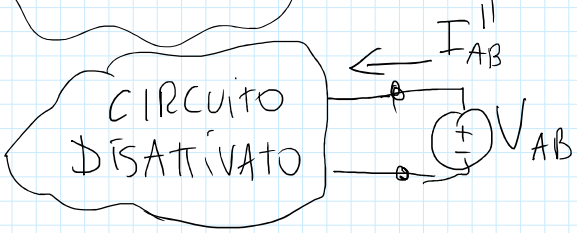


I_{AB}

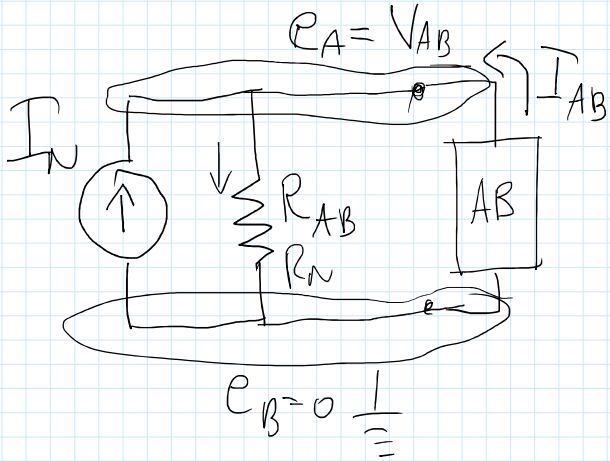
$I'_{AB} =$



$I''_{AB} =$



$$I''_{AB} = \frac{V_{AB}}{R_{AB}}$$



$$I_{AB} = -I_N + \frac{V_{AB}}{R_{AB}}$$

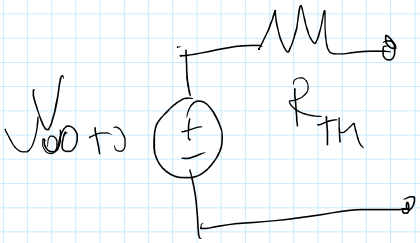
$$-I_N - I_{AB} + \frac{V_{AB}}{R_{AB}}$$

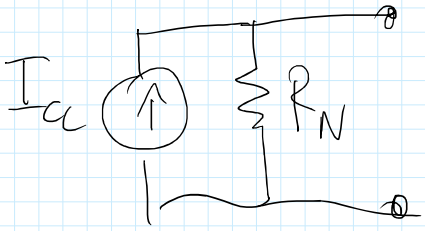
$$I_{AB} = -I_N + \frac{V_{AB}}{\quad}$$

$\Big\}$ = OK

$$I_{AB} = -I_N + \frac{V_{AB}}{R_{AB}}$$

$$I_{AB} = -I_N + \frac{V_{AB}}{R_{AB}}$$





$$V_{AB} = V_{TH} + I_{AB} R_{AB}$$

$$\alpha V_{AB} + \beta I_{AB} = COST$$

THEVENIN $\quad V_{AB} - R_{AB} I_{AB} = V_{TH} = V_{VUOTO}$

$$R_{AB}\left(\frac{V_{AB}}{R_{AB}} - I_{AB}\right) = R_{AB} I_N = I_{CC}$$

$$V_{TH} = R_{TH} I_N$$

TENSIONE
SERIE
(R)

THEVENIN - GEN REALE TENSIONE

PARTITORE TENSIONE

ALBERO

CORRENTE
PARALLELO
(G)

NORTON - GEN. REALE CORRENTE

PARTITORE CORRENTE

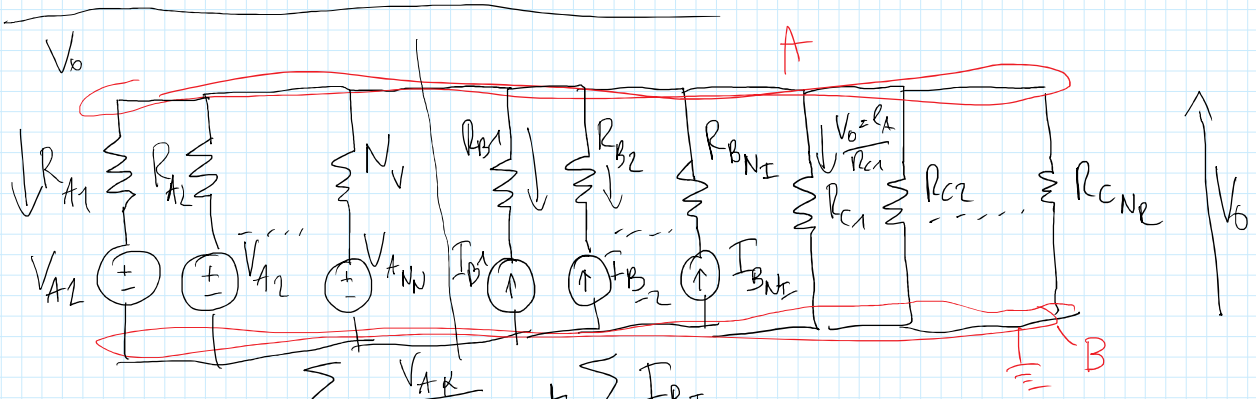
CO-ALBERO

ALBERO

NODI

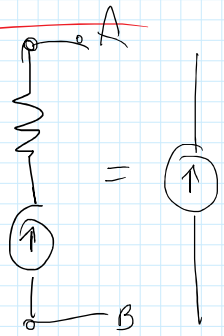
ANELLI

TEOREMA DI MILLMAN



$$V_0 = \frac{\sum_{K=1,N_V} \frac{V_{AK}}{R_{AK}} + \sum_{J=1,N_I} I_{BJ}}{\sum_{K=1,N_V} \frac{1}{R_{AK}} + \sum_{i=1,N_R} \frac{1}{R_{Ci}}} = I_0 R_0$$

$V_0 = e_A$



RAMI GEN TENSIONE $\frac{V_0 - V_{A1}}{R_{A1}} + \frac{V_0 - V_{A2}}{R_2} + \dots + \frac{V_0 - V_{A_{NV}}}{R_{NV}} +$

RAMI GEN CORRENTE $\left(-I_{B1} - I_{B2} \dots - I_{B_{NI}}\right) +$

RAMI RESISTIVI $V_0 \left(\frac{1}{R_{C1}} + \frac{1}{R_{C2}} + \dots + \frac{1}{R_{C_{NR}}}\right) = 0$

$$V_0 \left(\frac{1}{R_{A1}} + \frac{1}{R_{A2}} + \dots + \frac{1}{R_{A_{NV}}}\right) + V_0 \left(\frac{1}{R_{C1}} + \frac{1}{R_{C2}} + \dots + \frac{1}{R_{C_{NR}}}\right) =$$

$$= \frac{V_{A1}}{R_{A1}} + \frac{V_{A2}}{R_{A2}} + \dots + \frac{V_{A_{NV}}}{R_{A_{NV}}} + I_{B1} + I_{B2} + \dots + I_{B_{NI}}$$

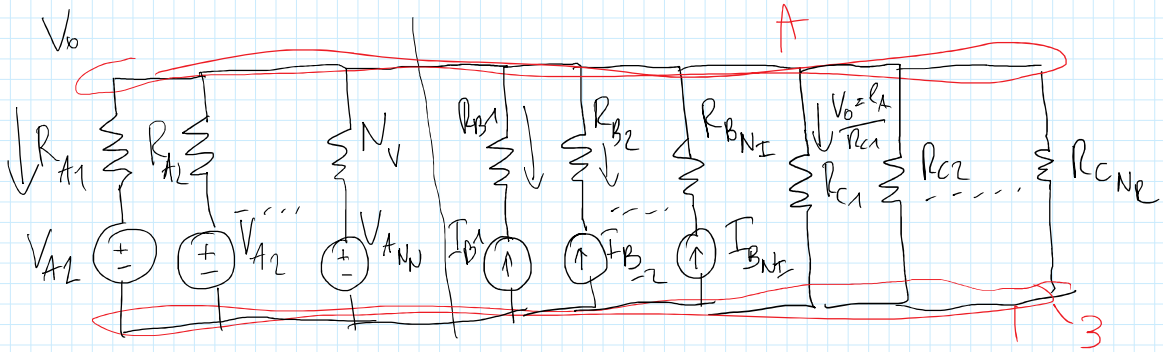
GEN TEN RAMI RESI GEN TEN GEN CORR

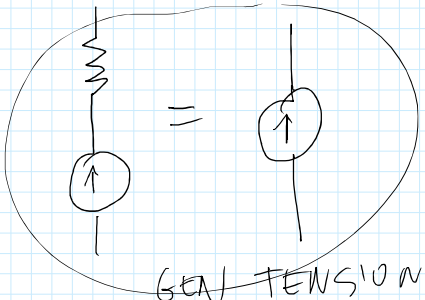
$$V_0 \left(\sum_{i=1,N_V}^{\text{GEN TEN}} \frac{1}{R_{Ai}} + \sum_{K=1,N_R}^{\text{RAMI RESI}} \frac{1}{R_{CK}} \right) = \sum_{i=1,N_V}^{\text{GEN TEN}} \frac{V_{Ai}}{R_{Ai}} + \sum_{J=1,N_I}^{\text{GEN CORR}} I_{BJ}$$

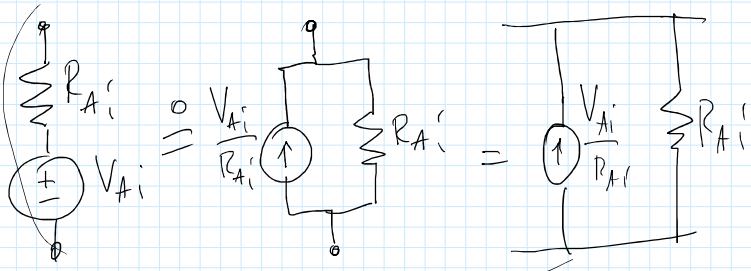
$R_0 = 1$

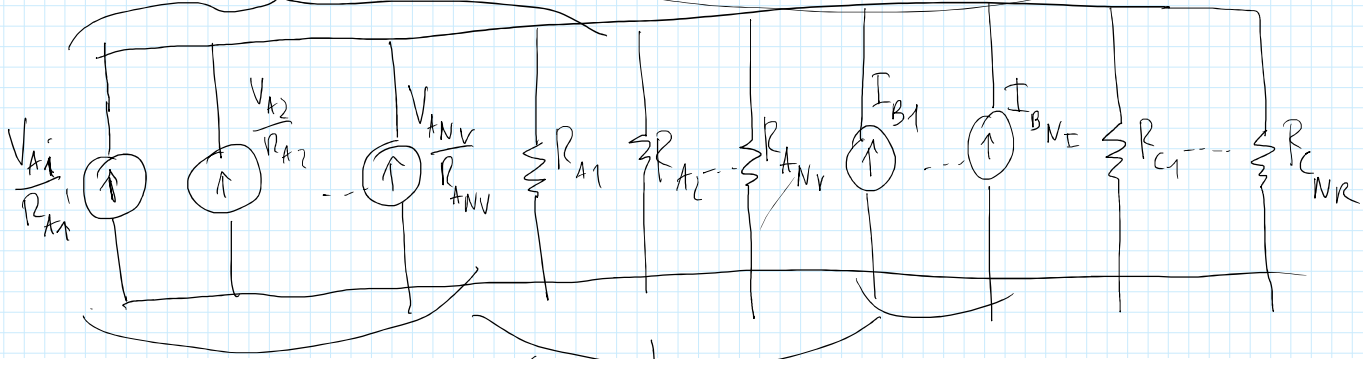
$$= I_0$$

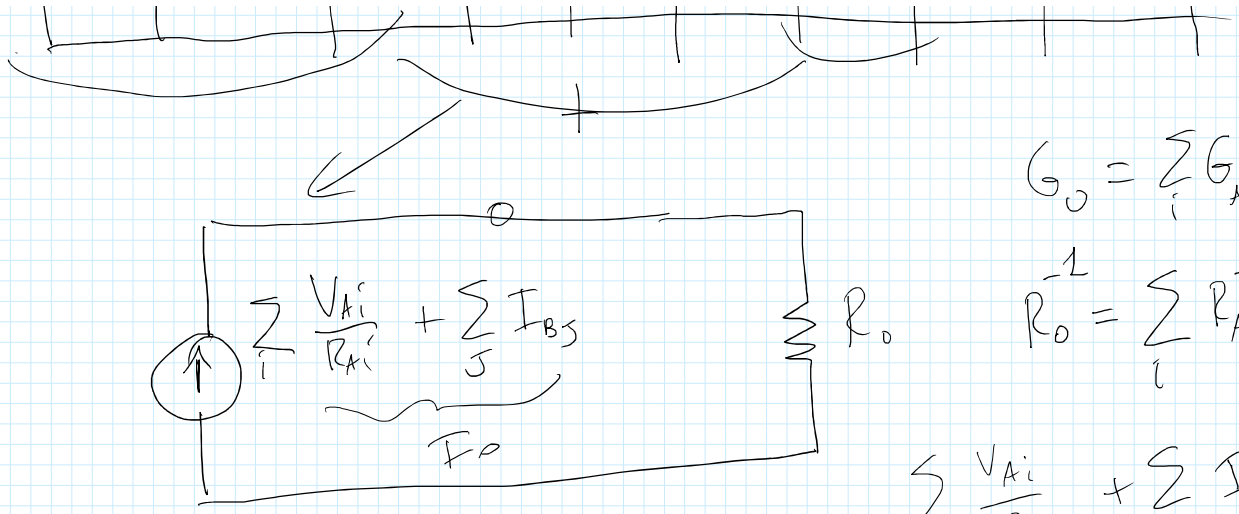
$$V_0 = R_0 I_0 = \frac{\sum_{i=1,N_V} \frac{V_{Ai}}{R_{Ai}} + \sum_{J=1,N_I} I_{BJ}}{\sum_{i=1,N_V} \frac{1}{R_{Ai}} + \sum_{K=1,N_R} \frac{1}{R_{CK}}}$$









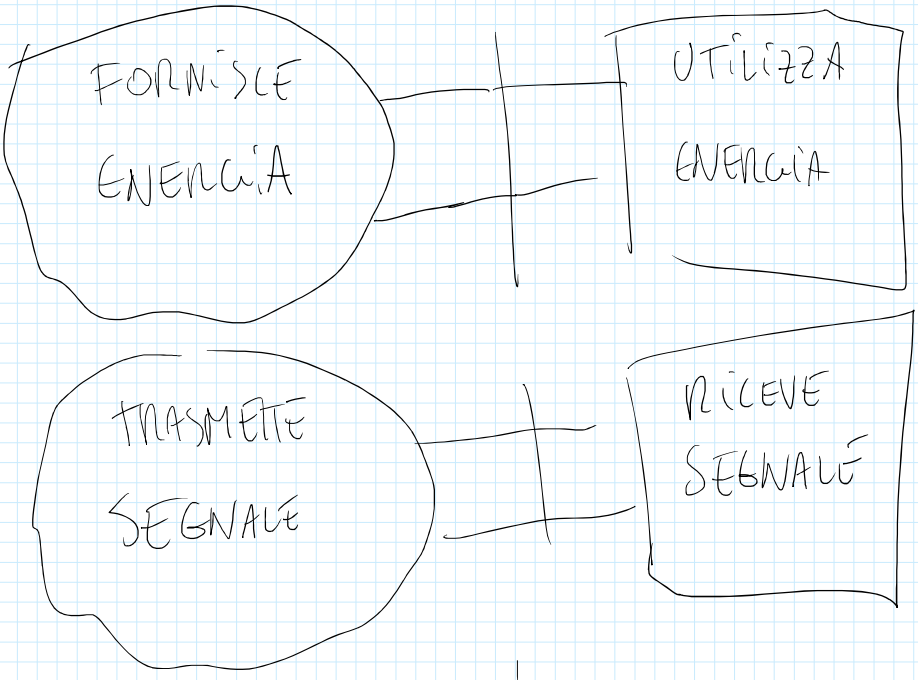


$$G_0 = \sum_i G_{Ai} + \sum_K G_{CK}$$

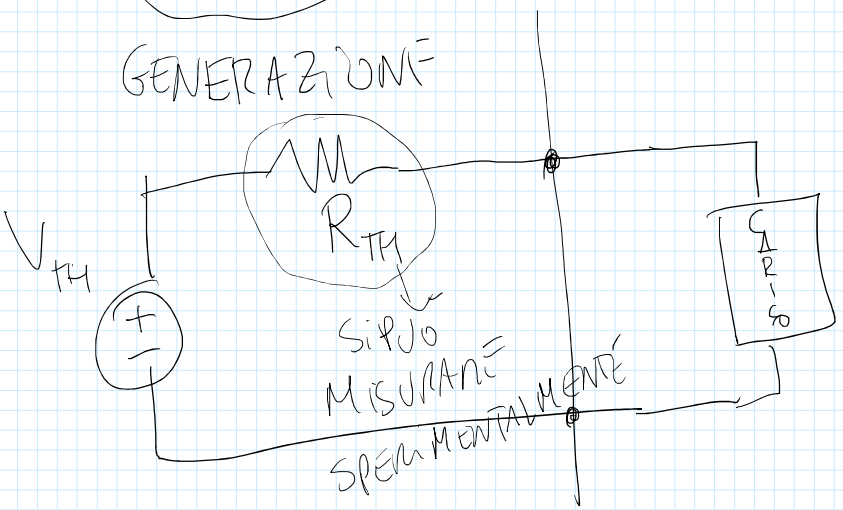
$$R_0^{-1} = \sum_i R_{Ai}^{-1} + \sum_K R_{CK}^{-1}$$

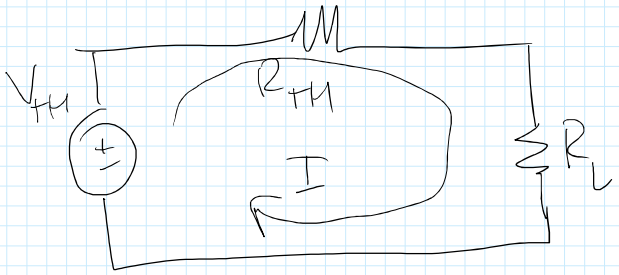
$$V_0 = R_0 I_0 = \frac{\sum_i \frac{V_{Ai}}{R_{Ai}} + \sum_J I_{BJ}}{\sum_i \frac{1}{R_{Ai}} + \sum_K \frac{1}{R_{CK}}}$$

MAX TRASFERIMENTO DI POTENZA



GENERAZIONE



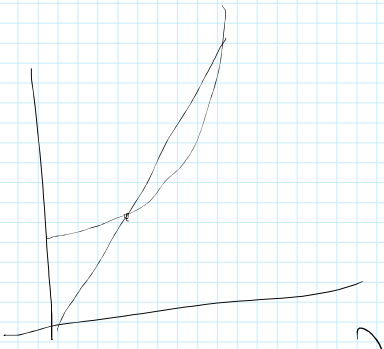


$$I = \frac{V_{TH}}{R_{TH}+R_L} \qquad P_{RLOAD} = I^2 R_L$$

$$0 \qquad V_{TH}^2 \left(\frac{R_L}{} \right) \qquad \frac{F(x)}{} - \frac{F'(x)}{} \cdot \frac{F(x)}{}$$

$$P_{R_{LOAD}} = V_{TH}^2 \left(\frac{R_L}{(R_{TH}+R_L)^2} \right) \qquad \frac{f(x)}{g(x)} = \frac{f'(x)}{g(x)} \cdot \frac{f(x)}{g(x)}$$

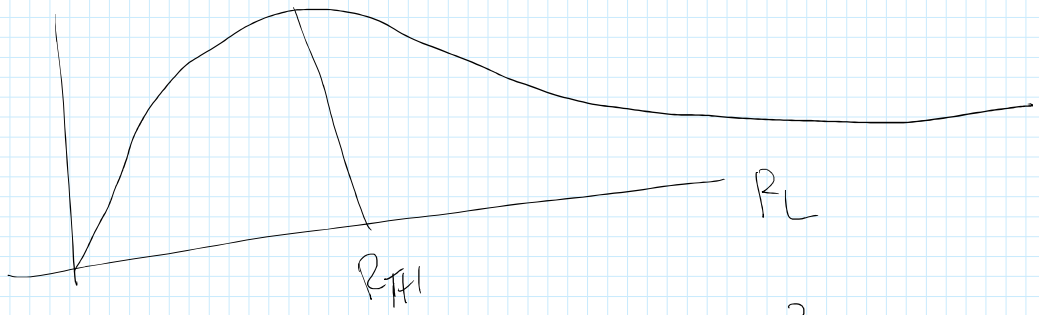
PER QUALE VALORE DI R_L P_{R_L} È MAX ?

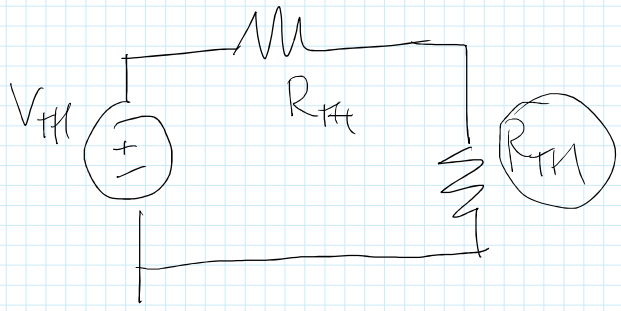


$$\frac{\partial P_{R_{LOAD}}}{\partial R_L} = V_{TH}^2 \qquad \frac{f'(x)g(x) - f(x)}{g^2(x)}$$

$$\partial \frac{R_L}{(R_{TH}+R_L)^2} \qquad \frac{1 \cdot (R_{TH}+R_L)^2 - 2(R_{TH}+R_L)R_L}{(R_{TH}+R_L)^4 3}$$

$$\frac{\partial P}{\partial R_L} = \frac{(R_{TH}+R_L) - 2R_L}{(R_{TH}+R_L)^3} = 0 \qquad \frac{R_{TH} - R_L}{(R_{TH}+R_L)^3}$$



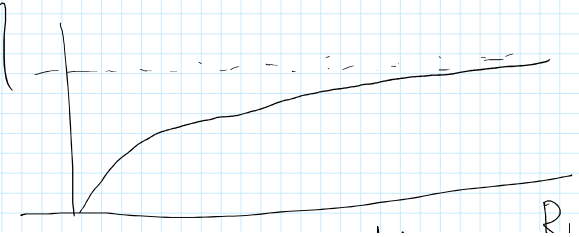


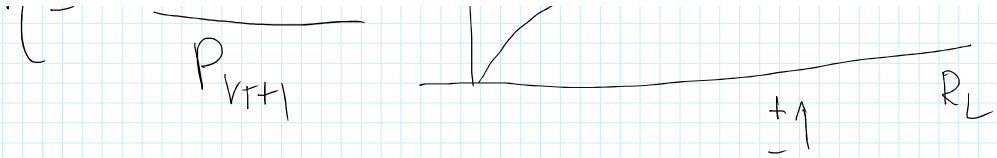
$$P_{R_L} = V_{TH}^2 \cdot \frac{R_L}{(R_{TH}+R_L)^2}$$

$$P_{R_L}^{MAX} = \frac{V_{TH}^2}{4R_{TH}} = P_{MAX\ TRASFERIBILE}$$

$$\alpha \frac{1}{R_{INT}}$$

$$\eta = \frac{P_{R_{LOAD}}}{P_{V_{TH}}}$$




$P_{V_{T+1}}$
± 1
R_L