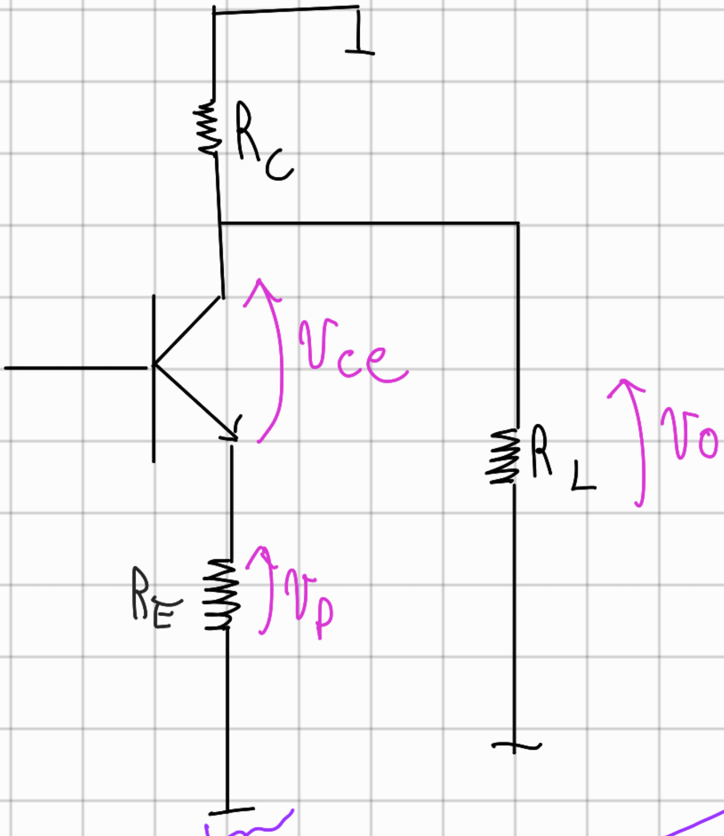
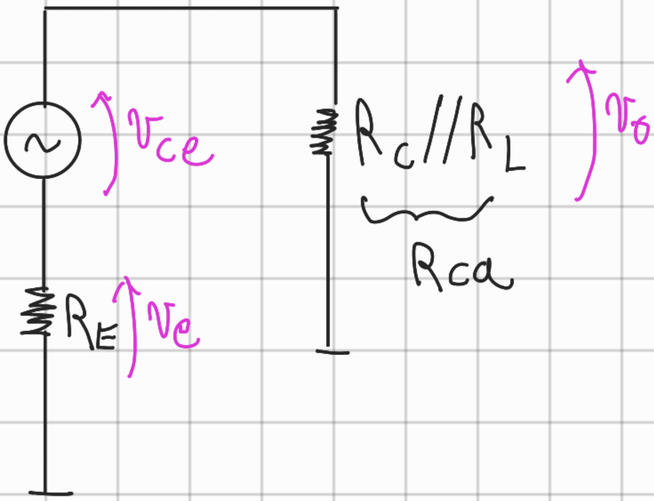


$v_{ce} \neq v_o$

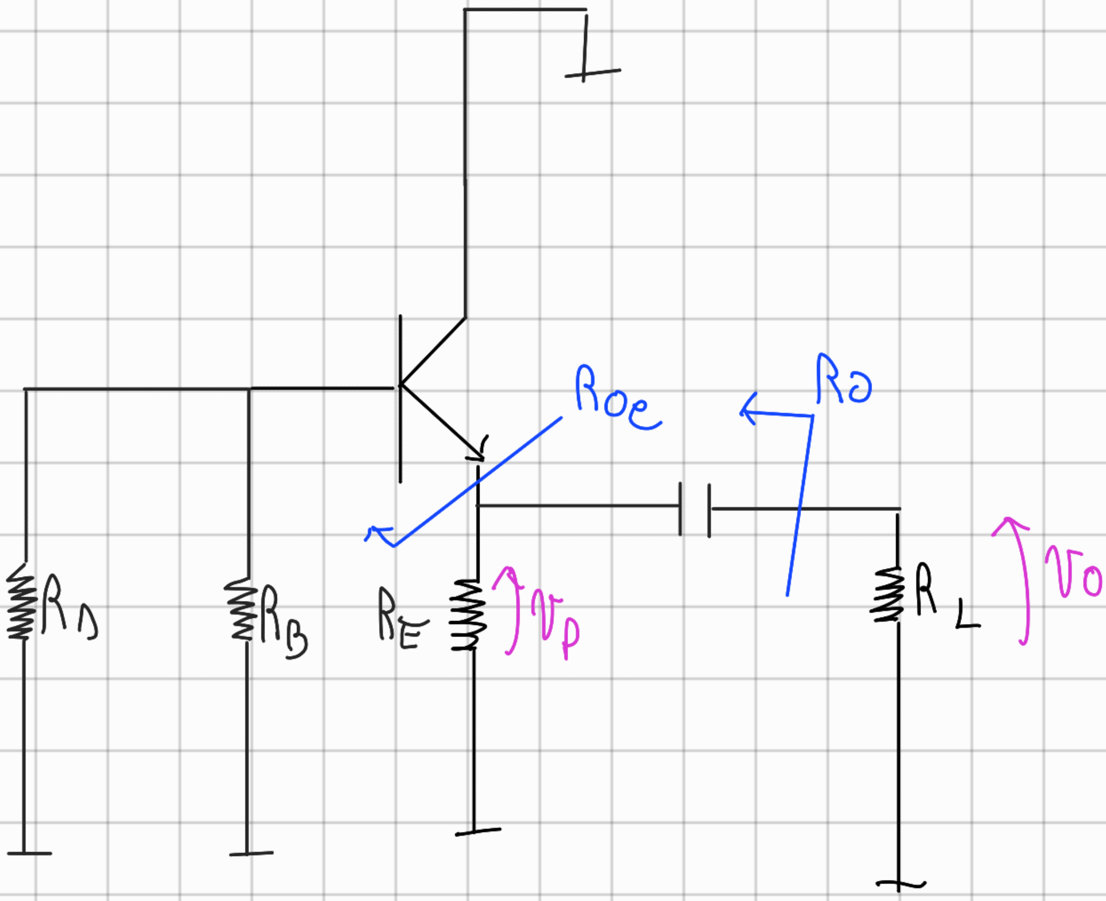
Divisor resistivo

$$\frac{v_{ce}}{R_E + R_{ca}} \cdot R_{ca} = v_o$$

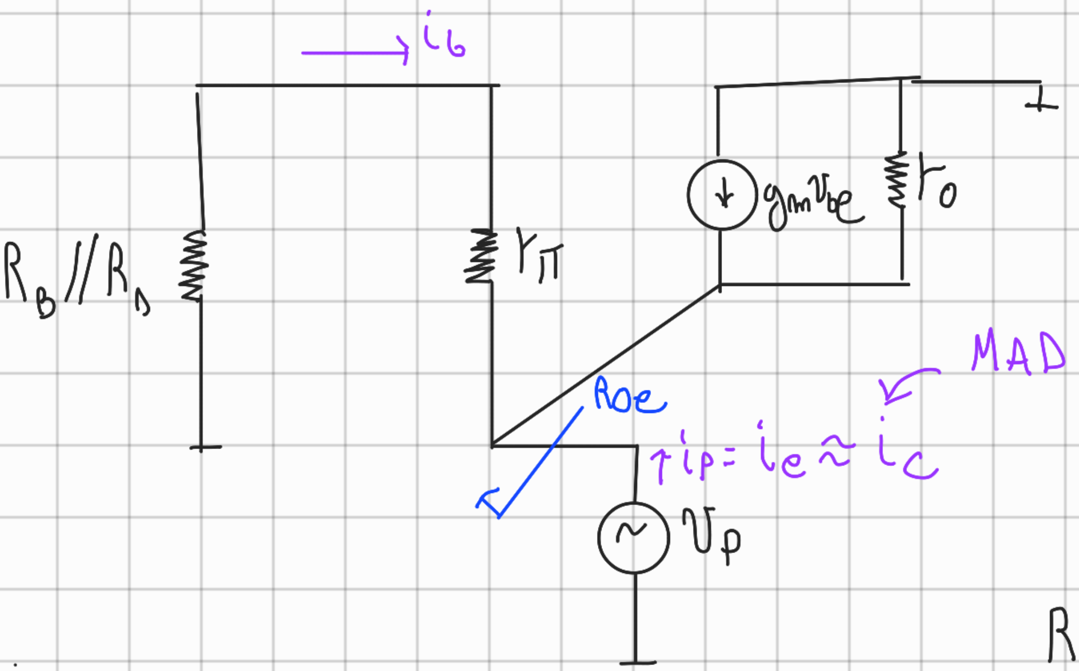


$\hat{v}_{ce}$, $\hat{v}_s$ si me pide el eficaz divido por $\sqrt{2}$

$$\frac{\hat{v}_{ce\,max}}{|Av_s|} = \hat{v}_s$$



o Este R_o no va a ser la típica, se va a ir a un extremo



$$R_{oe} = \frac{v_p}{i_p}$$

$$\frac{i_c}{i_b} = \beta$$

$$R = R_B // R_D + r_\pi$$

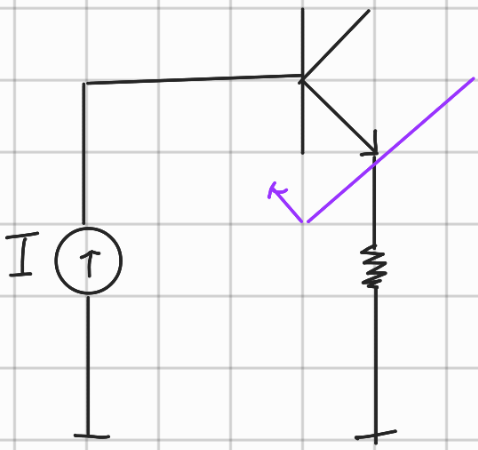
$$r_\pi = \frac{\beta_0}{g_m} \longrightarrow \frac{r_\pi}{\beta_0} = \frac{1}{g_m} = r_d$$

Usamos el teorema de Miller:

$$i_b \cdot R = i_c R_o^*$$

$$\frac{i_c}{\beta} R = i_c R_o^*$$

$$R_{oe} = \frac{R_B // R_D + r_\pi}{\beta + \cancel{1}} \approx \frac{R_B // R_D}{\beta} + \frac{r_\pi}{\beta} = \underbrace{\frac{R_B // R_D}{\beta}}_{= 0 \text{ si } R_D = 0} + r_d$$



$R_{oe} \longrightarrow$ en este caso no se ve muy grande

Analizo los extremos: $R_D = 0$ y $R_D \longrightarrow \infty$

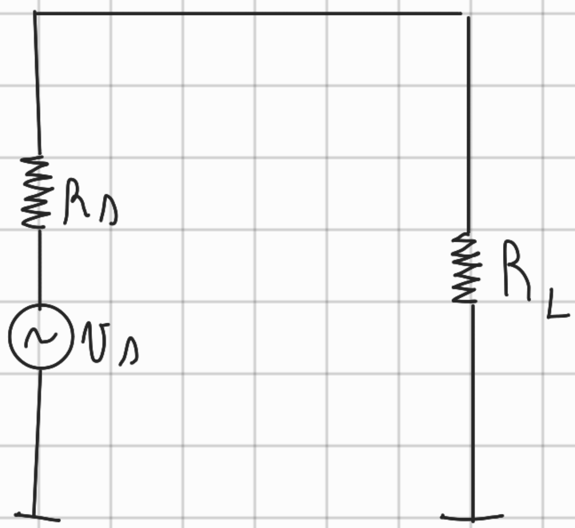
$R_o = R_{oe} \,//\, r_o$

Dependiendo V_A queda solo R_{oe}

si R_L es comparable con R_s → no nos sirve necesitamos R_L grande para que $V_i = V_s$

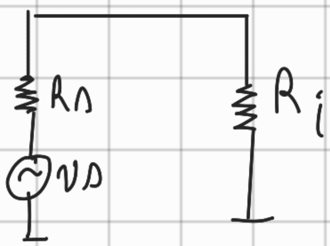
↓

adaptar impedancias



Necesito $R_L >> R_s$

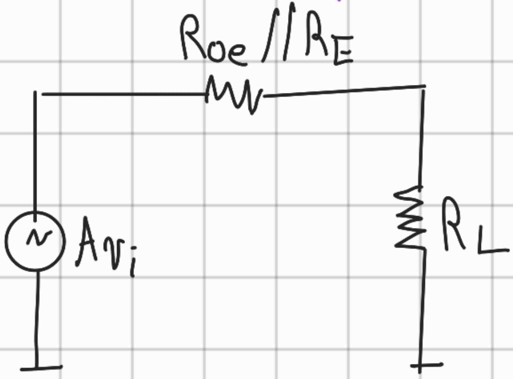
como R_L está a la entrada del transistor lo que en realidad necesitamos es

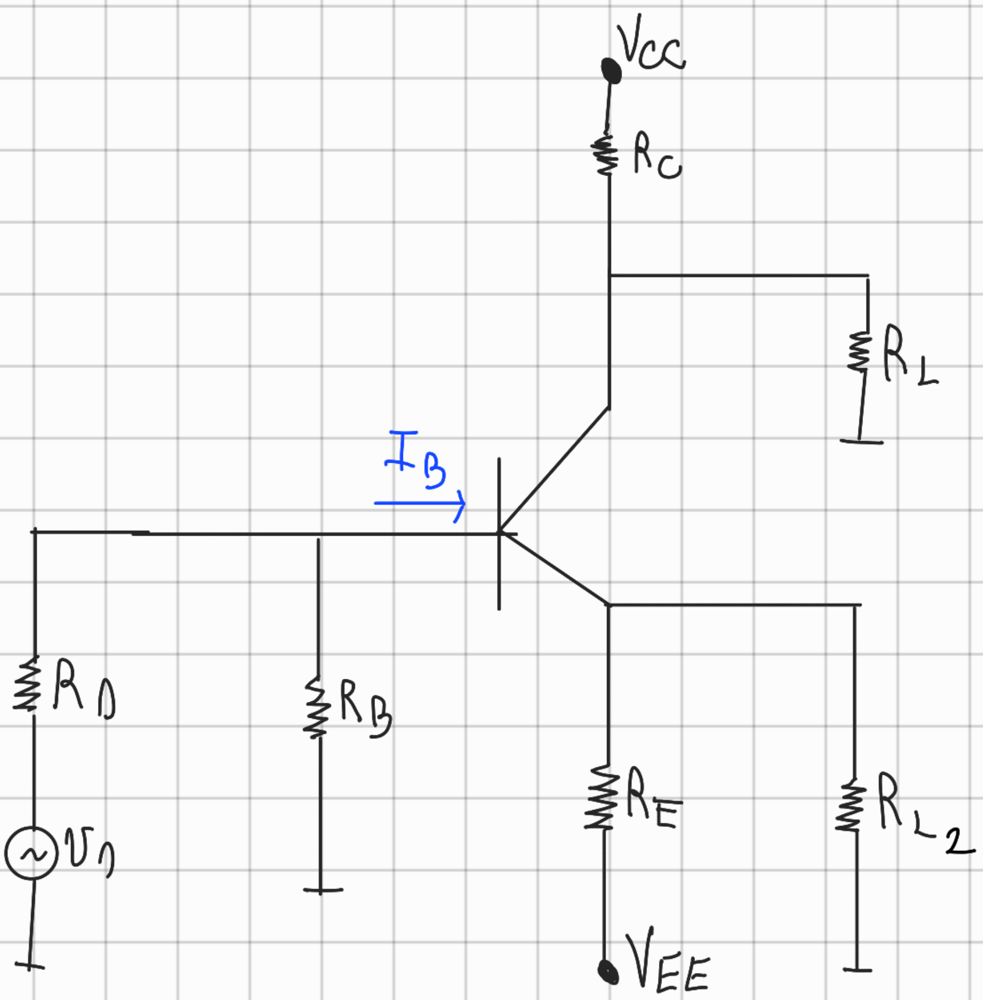


→ $R_i >> R_s$

o con la resistencia R_E logramos hacer algo parecido a la salida

el R_E nos ayuda a que la salida caiga toda en R_L

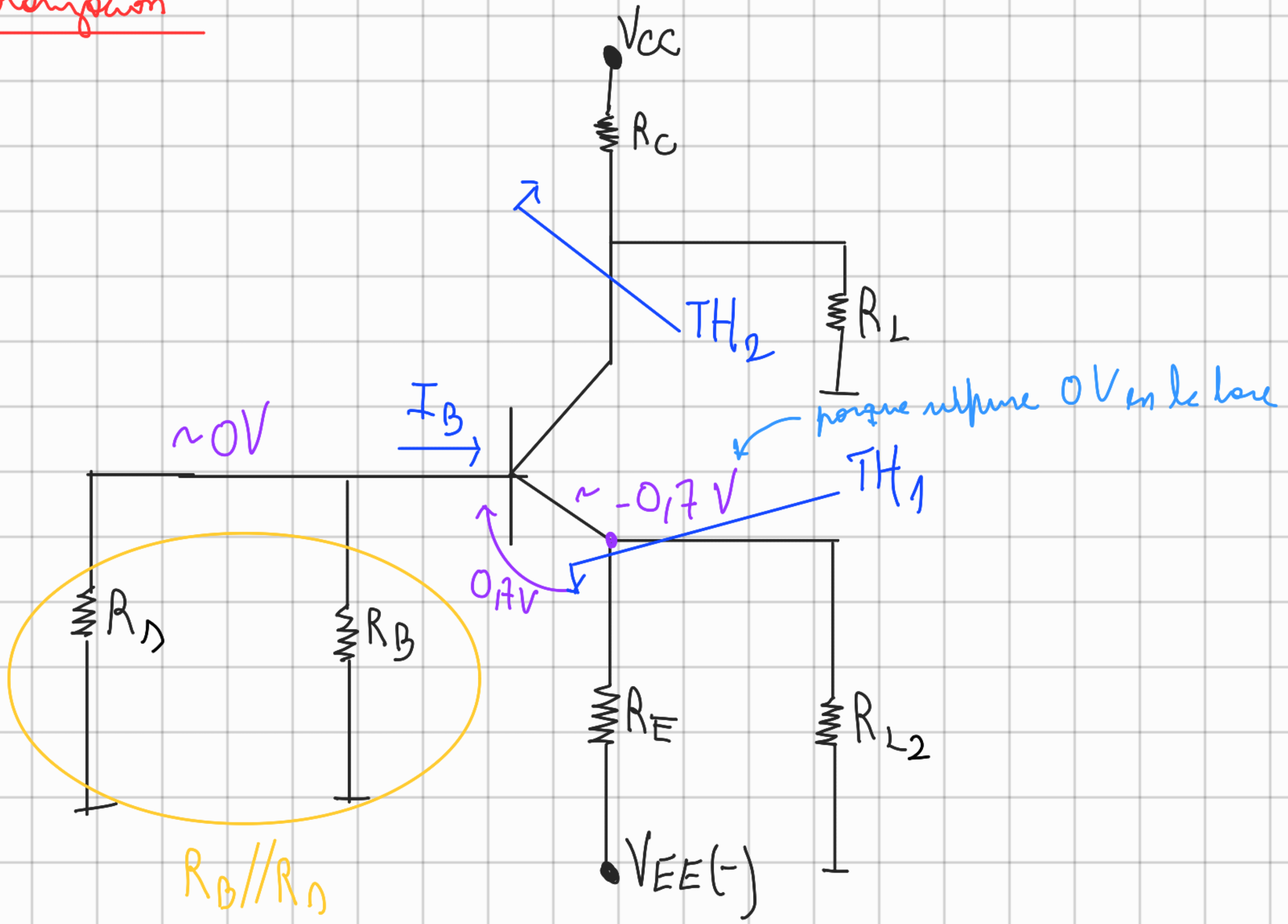




acople directo en todos lados sin capacitores

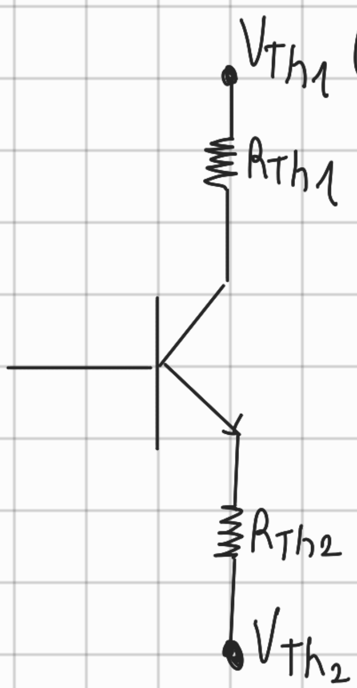
∘ R_D participa en el punto Q

Polarización

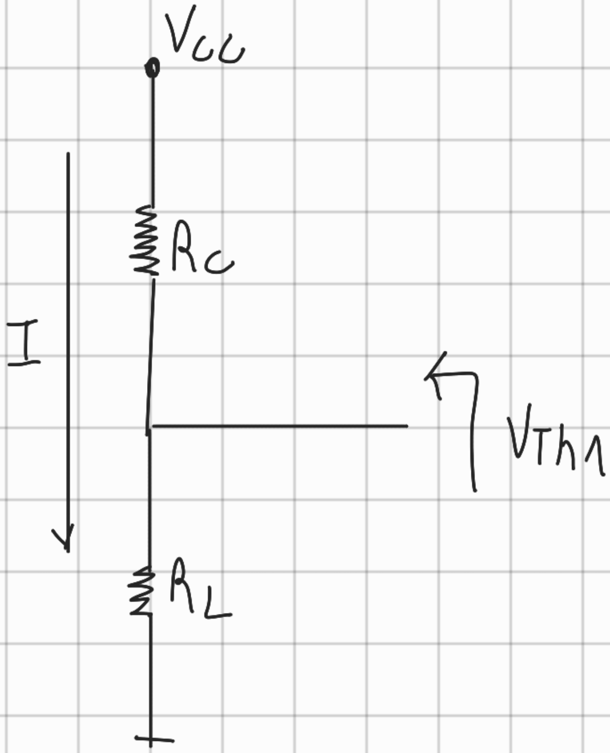


$I_B \cdot R_B//R_D \simeq 0$

Llevado así →



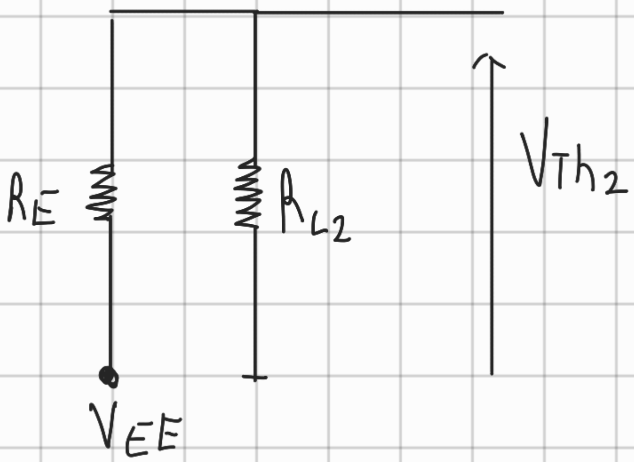
- V_{Th_1} : (colector)



$$\underbrace{\frac{V_{CC}}{R_C+R_L}\cdot R_L}_{>0} = V_{Th1}$$

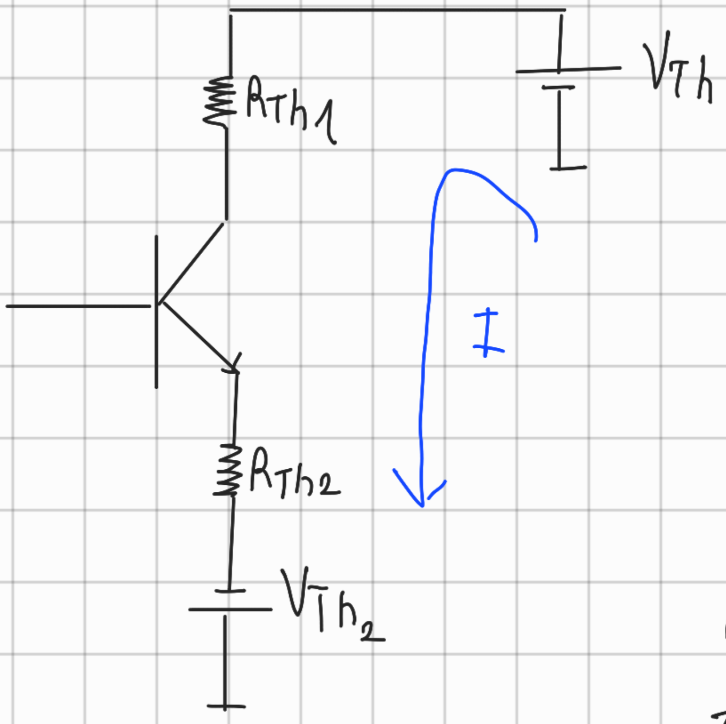
$$R_{Th} = R_C // R_L$$

- V_{Th_2} : (emisor)



$$V_{Th_2} = \frac{\overset{(-)}{V_{EE}}}{R_E+R_{L_2}}\cdot R_{L_2}$$

$$R_{Th_2} = R_E // R_{L_2}$$

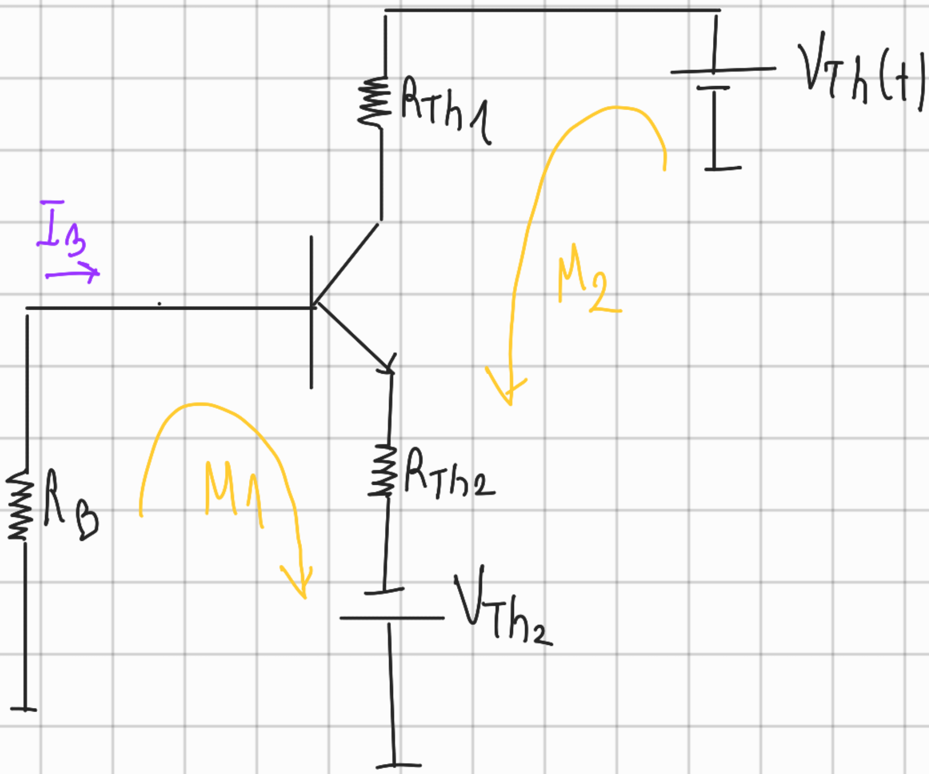


no hay caminos distintos para la corriente

○ La recta de carga estatica y dinamica van a coincidir

↳ los limites van a depender de los V_{Th_1} y V_{Th_2}

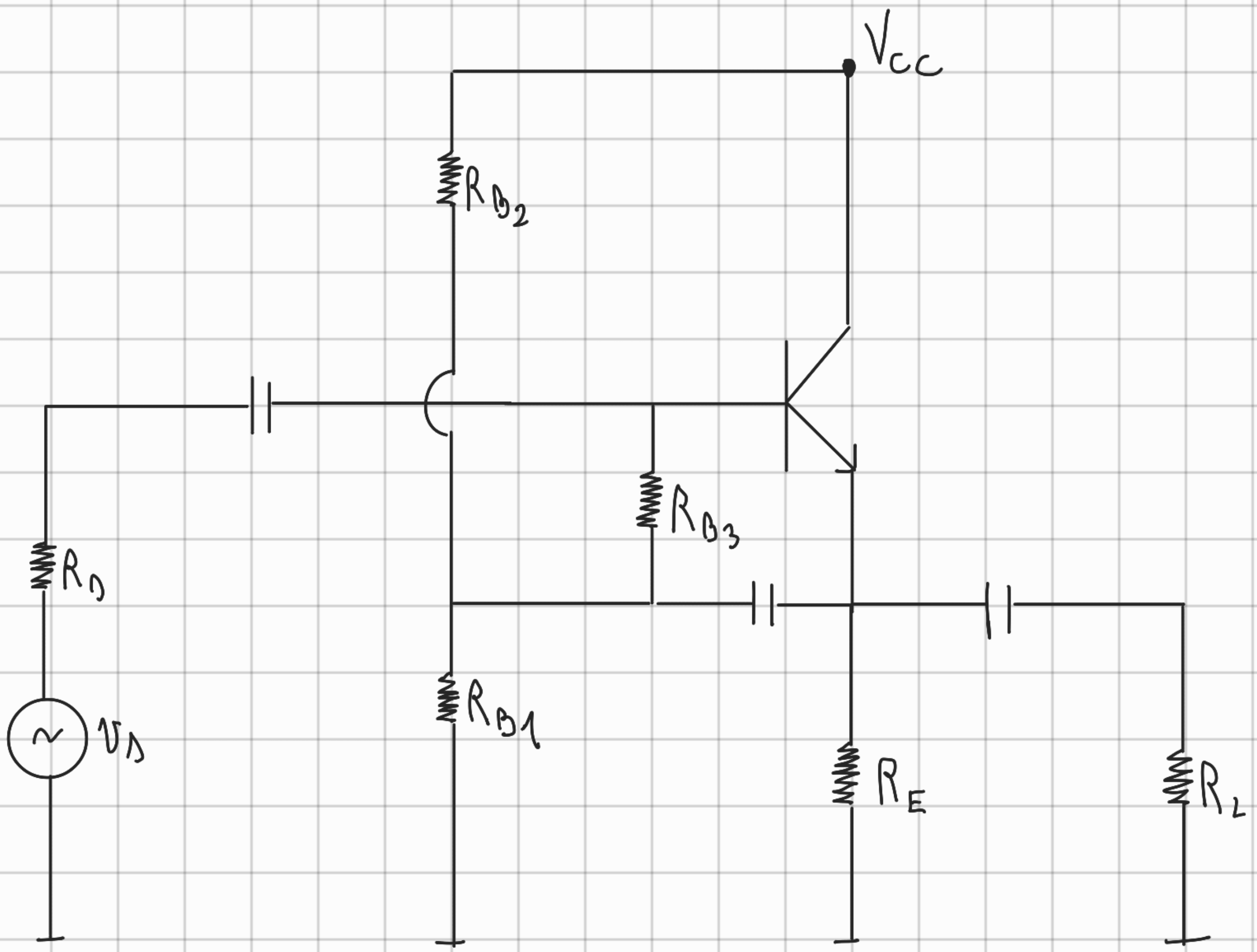
y las pendientes van a depender de R_{Th_1} y R_{Th_2}



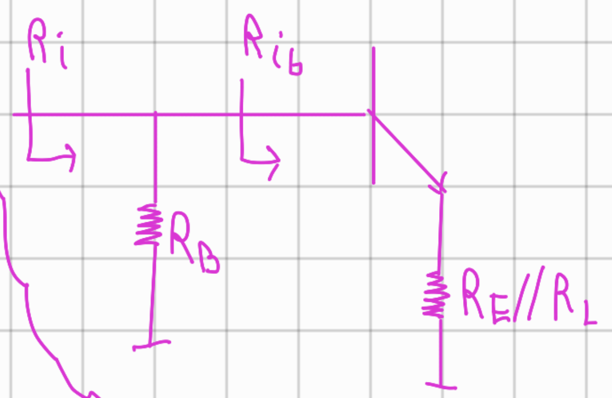
$$I_B = \frac{I_C}{\beta}$$

C-34

Bootstrap



Convencional (etapa)



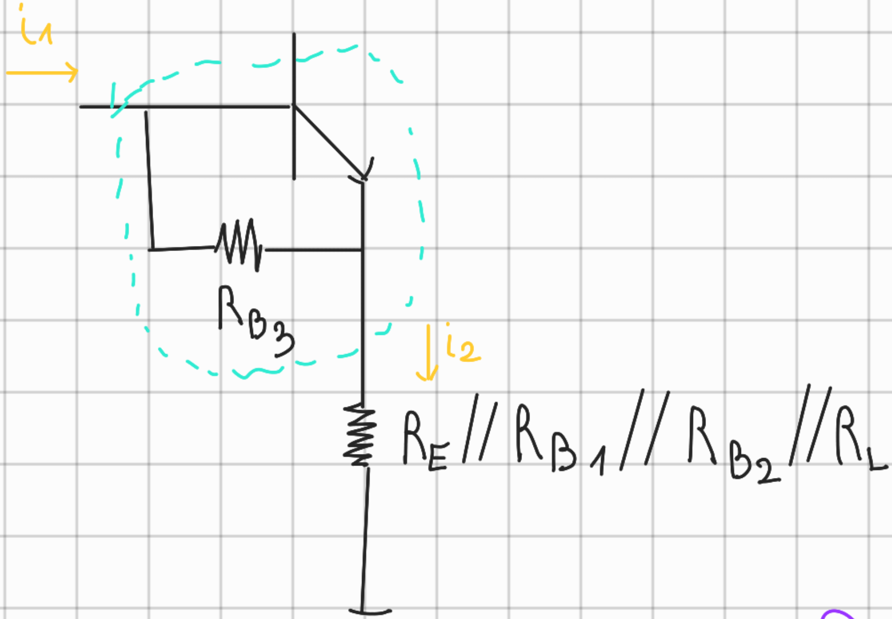
$$\boxed{R_i = R_B // \left[r_\pi + (\beta+1) R_E // R_L \right]}$$

$\searrow R_B // R_{ib}$

○ Bootstrap → Busca remover R_B para tener $R_{ib} = R_i$

↓ esto es igual a lo de antes

En señal lo que queda es:



$$r^* = R_{B_3} // r_\pi$$

↓

$$\beta = g_m r_\pi$$

$$\beta^* = g_m (r_\pi // R_{B_3})$$

$$A_i = \frac{i_2}{i_1}$$

Para que R_{B_3} no me altere el beta

↓

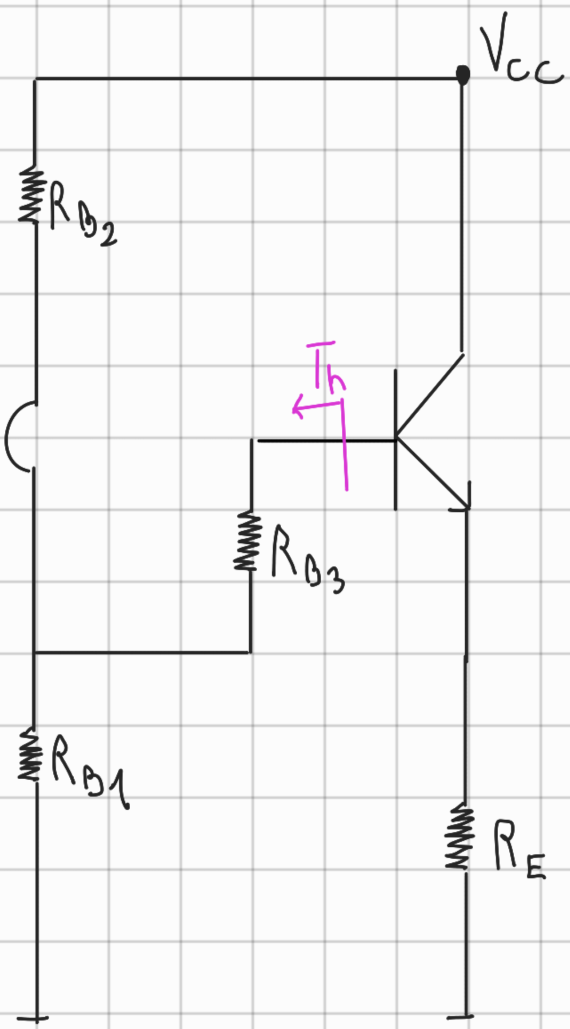
$$R_{B_3} \gg r_\pi$$

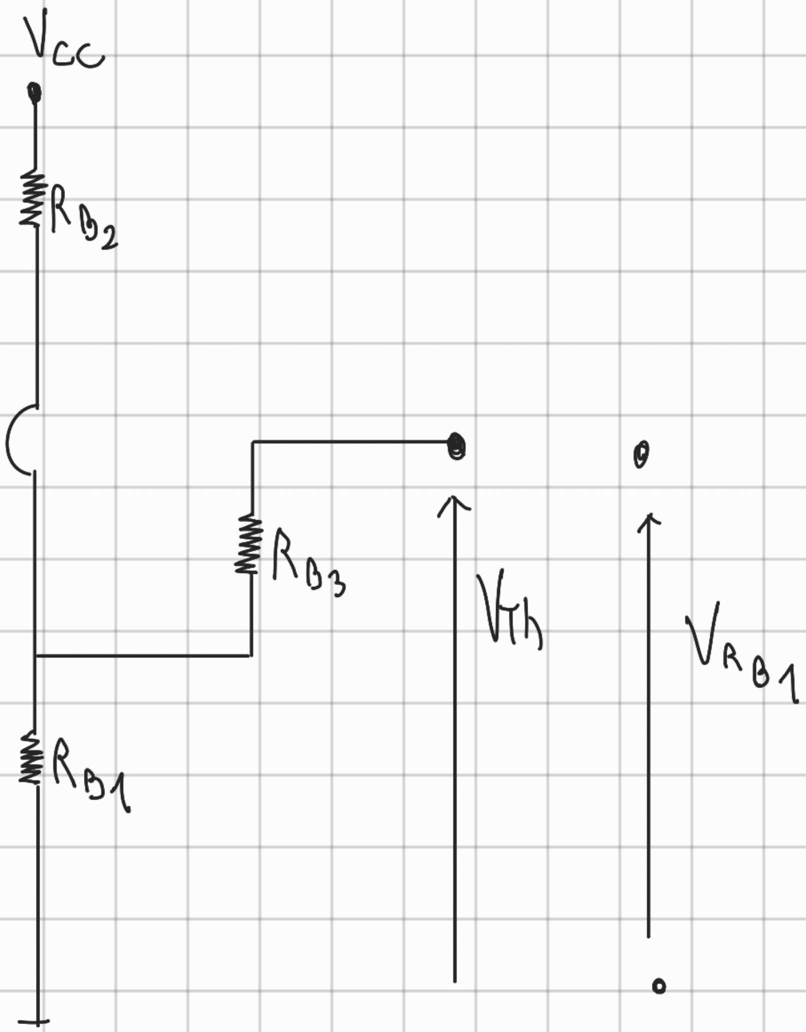
MAD

$$i_1 \simeq i_b \longrightarrow i_2 = i_e \simeq \beta i_b = \beta i_1$$

$$A_i = \beta$$

En corriente continua





$$V_{Th} = \frac{V_{CC}}{R_{B_2} + R_{B1}} R_B$$

$$R_{Th} = R_{B_2} // R_{B1} + R_{B_3}$$