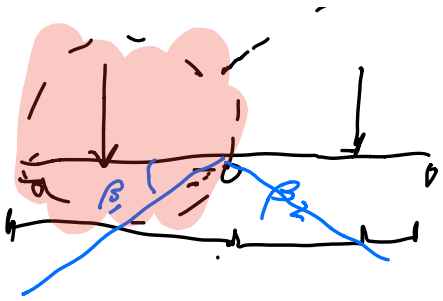
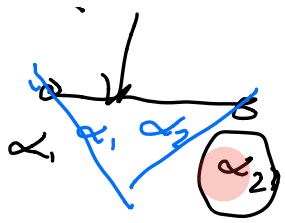
- Paquetes - herramientas de la comunidad listo para ser implementado
- Módulo - Archivo que recoge funciones para utilizarlas y procesar información
- Clases - Datos no estructurados que yo puedo crear.
- El par (Tupla) - Se ingresa como si fuera una coordenada
- Una clase esta compuesta por atributos y Metodos

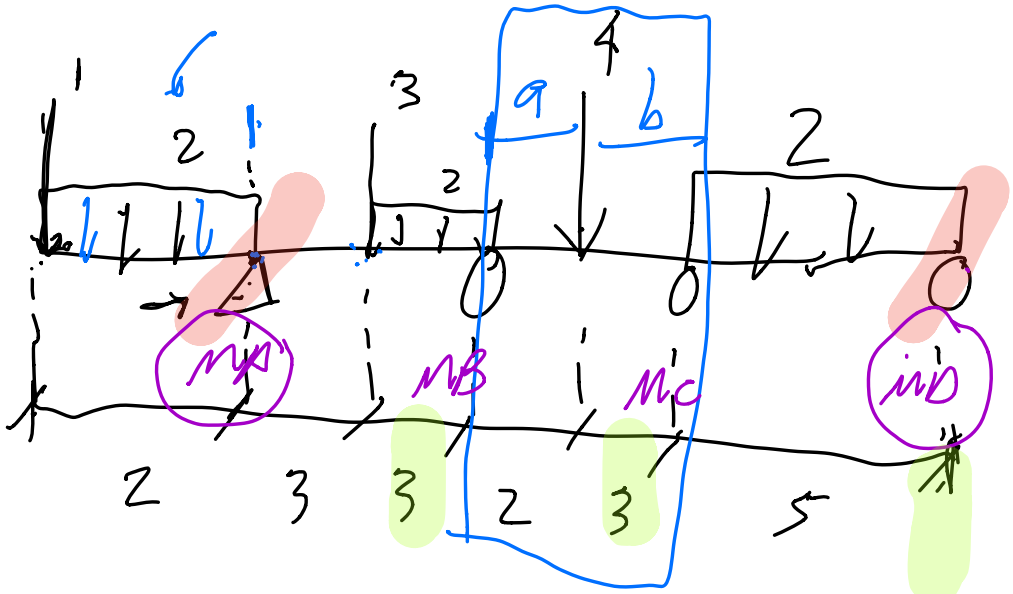
"Tramo" — Atributo → Valor particular que describe un elemento particular de la clase

Mostrar información — Metodo → calculo que se hace sobre los atributos de clase para devolver o procesar la info



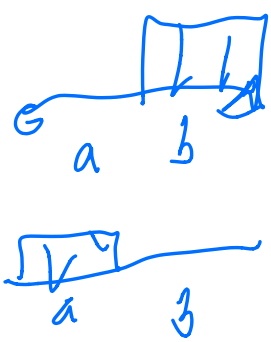


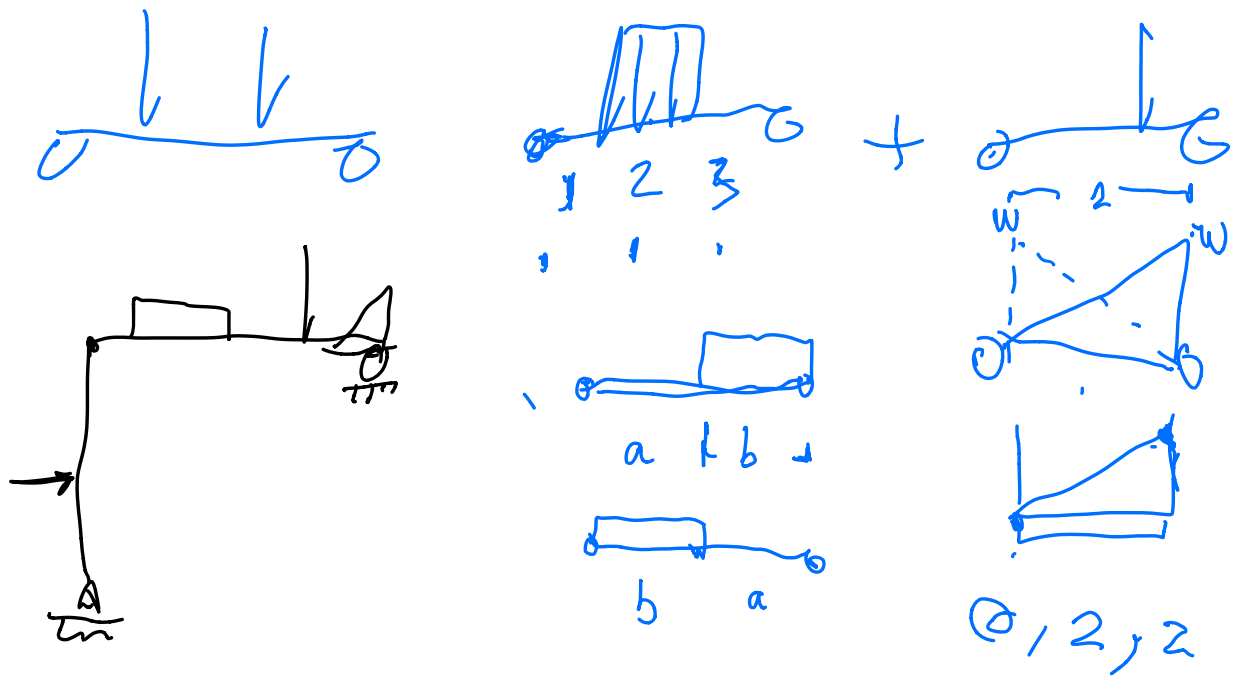
$C \quad -6\beta \quad -6\beta_2$



$2 + 4(1)$

$4 \quad 6 \quad -6$

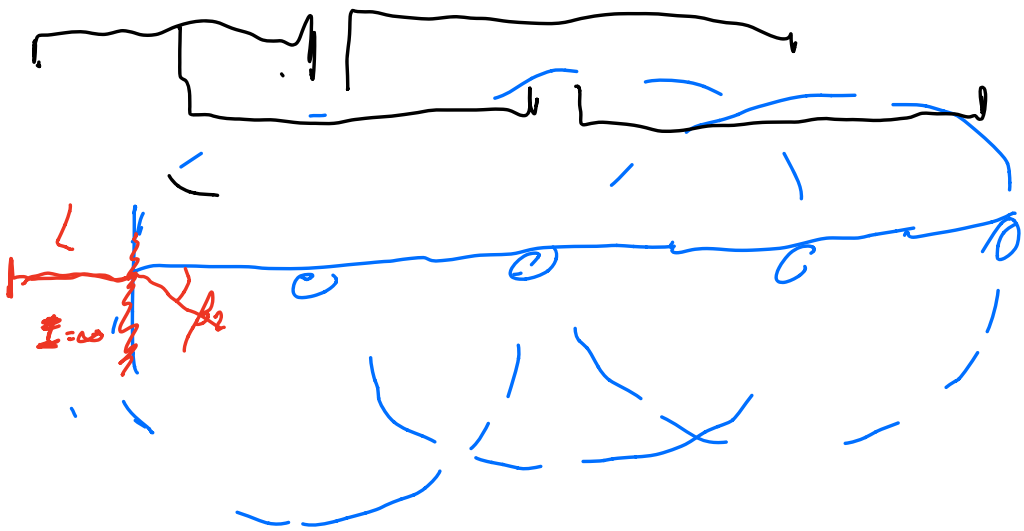




$$M_a \cdot L_1 + 2M_b(L_1 + L_2) + M_c(L_2) + 0 \times M_D =$$

$$-6\beta_1 - 6\beta_2 = -6(\beta_1 + \beta_2)$$

β_1 y β_2 se calculan con las tablas.



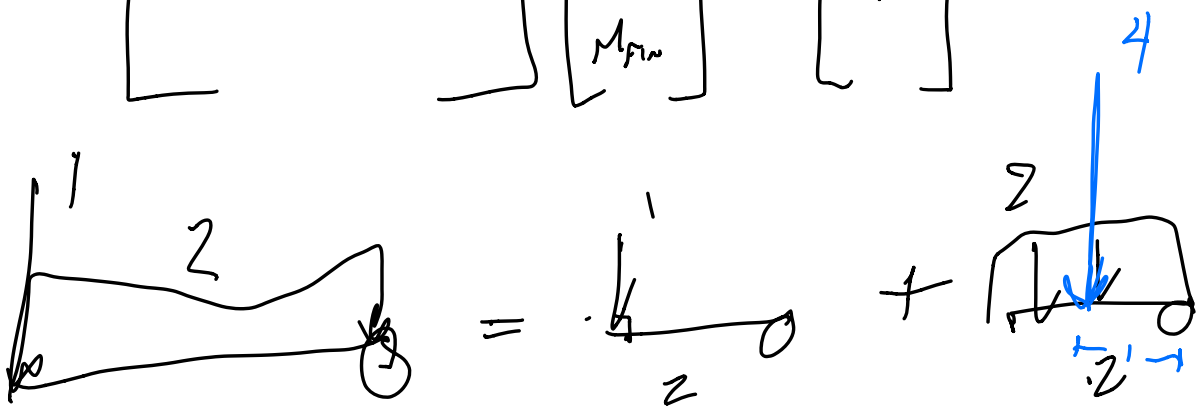
$$\cancel{M_a L_1}^{\,0} + 2M_b(\cancel{L_1}^{\,0} + L_2) + M_c(L_2) + 0 \times M_D =$$

$$-6\cancel{\beta_1}^{\,0} - 6\beta_2 = -6(\beta_1 + \beta_2)$$

β_1 y β_2 se calculan con las tablas.

Tomados com Rigidez.

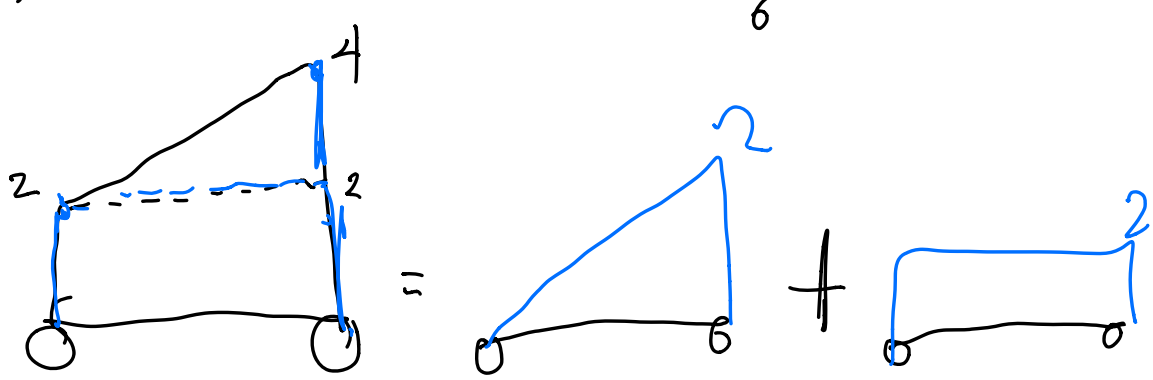
$$\begin{bmatrix} & & \\ & \Delta & \\ & & \end{bmatrix} \begin{bmatrix} M_A \\ \vdots \\ M_{FIN} \end{bmatrix} = \begin{bmatrix} \beta_s \end{bmatrix}$$

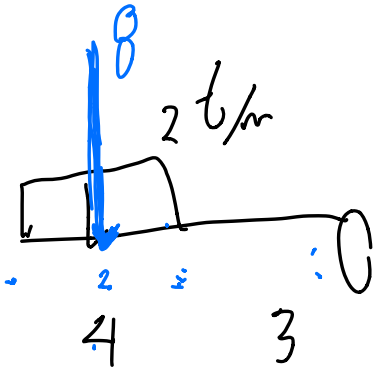


$$M = 2 \qquad 2(2)\cdot\frac{2}{2}$$

$$2 + 4$$

$$M_A = 6$$



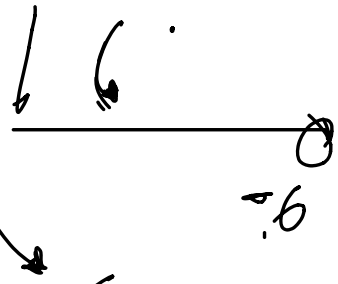


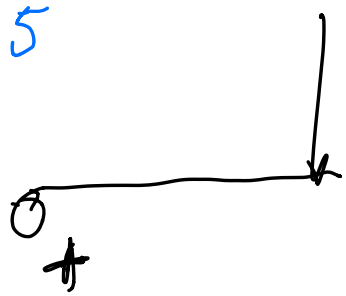
-8 ha

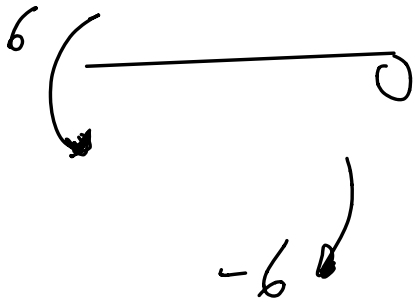
-8

8 a 5

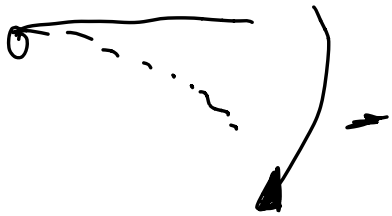
4 2 2 3



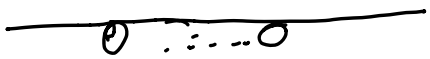
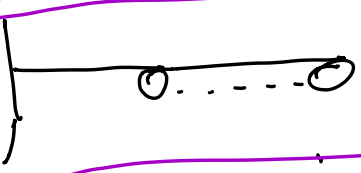
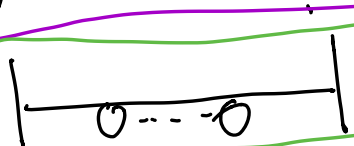
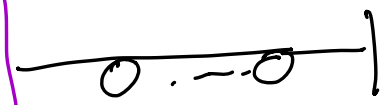




-M



Casos:

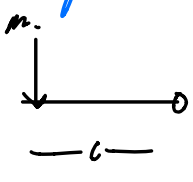
		Caso
	→ n_tramos − 2	I
	→ n_tramos − 1	II
	→ "	III
	→ n_tramos − 2.	IV
	→ n_tramos.	V
	→ n_tramos + 2.	VI
	→ n_tramos	VII
	→ n_tramos.	VIII
	→ n_tramos.	IX

CASO I

$\longrightarrow$ n_TRAMOS − 2

Tramo 0

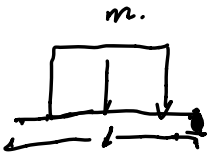
Puntual



magnitud · (L − DE izq)

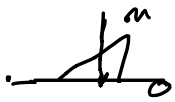
$M_1 = \uparrow$

Distribuida



magnitud · long Carga · $\left(L - \frac{\text{long Carga}}{2} - DE_{izq}\right)$

Triangular



$(DPE - DE_{izq})$ mayor DE ∧ DPE long C

> 0

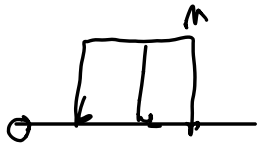
$\frac{1}{2}$ mayor · long C $\left(L - DE_{izq} - \frac{2}{3}\text{ long Carga}\right)$

Tramo −1

Puntual

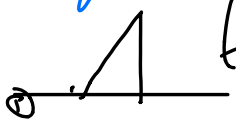
mayor · DE izq.

Distribuida.



magnit · long Carg $\left(\frac{\text{long Carg}}{2} + DE_{izq}\right)$

Triangular



$(DPE - DE_{izq})$

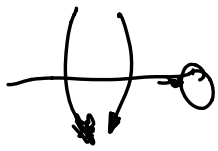
> 0

$\frac{1}{2}$ mayor x long C $\left(DE_{izq} + \frac{2}{3}\text{ long Carga}\right)$

$(DP_E - DE_{izq}) = 0$

$\frac{1}{2}$ mag. Long Carg $(L - DE_{izq} - \frac{1}{3}$ Long Carga$)$

momento



Si momento — Antihorario

→ M = − magnitud.

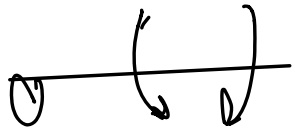
Si momento — Horario

→ M = − magnitud

$(DP_E - DE_{izq}) = 0$

$\frac{1}{2}$ magn × long Carg $(DE_{izq} + \frac{1}{3}$ long$)$

momento



Si mom → Horario

M = magnitud

Si mom → Antihorario

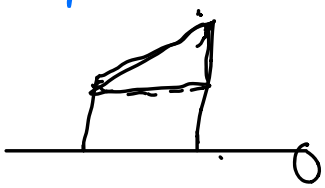
M = magnitud

Trapezoidal

MM	Mm
DM	Dm

Long Carg

Trapezoidal

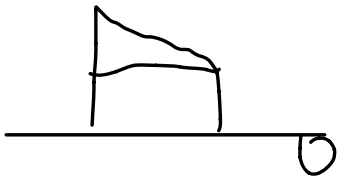


Si $DM - Dm \geq 0$

$\Delta = MM - Mm$ = magnitud.

$+$

$Mm \cdot \text{long Carg}$

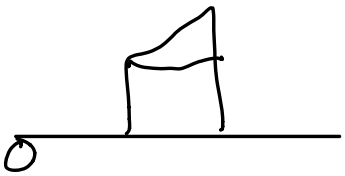


Si $DM - Dm < 0$

$\frac{(Mm - Mm)}{2} \text{long}\left(L - DM - \frac{1}{3}\text{long}C\right)$

$+$

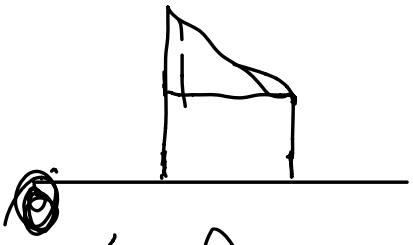
Trapezoidal



Si $DM - Dm > 0$

$\frac{1}{2}(DM - Dm) \cdot \text{Lglarg}\left(Dm + \frac{2}{3}\text{long}\right)$

$+ Mm \cdot \text{long}C$

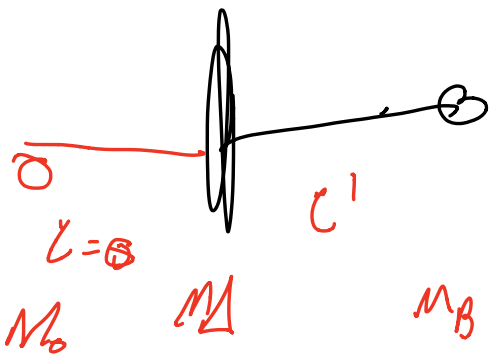


Si D

$\frac{1}{2}(DM \cdot Dm) \cdot \text{long Carg}\left(DM + \frac{1}{3}\text{long}\right)$

$+$

$Mm \cdot \text{long}\left(Dm + 0{,}5\,\text{long Ca}\right)$



$$\cancel{M_0}^{\,0} + 2M_A(L') + M_B L' = -G(\alpha_2)$$

$\text{Lex} = 1$

$i = 1$

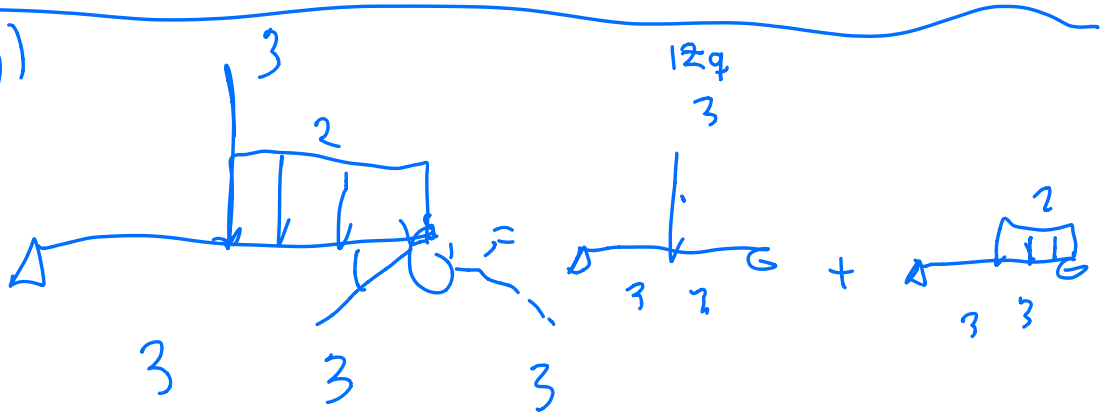
TRAIGO TRAMO $(i, i+1)$

$$\begin{array}{c} \begin{array}{cccc} M_1 & M_2 & \cdots & M_{n-1} \end{array} \\ \begin{bmatrix} a & b & c & 0 \cdots 0 \\ 0 & a & b & c \cdots 0 \\ 0 & 0 & a & b \quad c \cdots \end{bmatrix} \end{array}$$

$$a M_1 + b M_2 = \boxed{C}$$

$$\boxed{}$$

D)

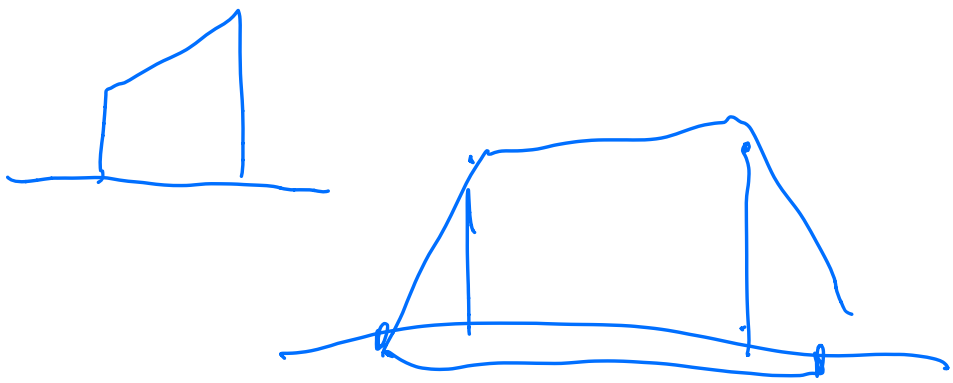


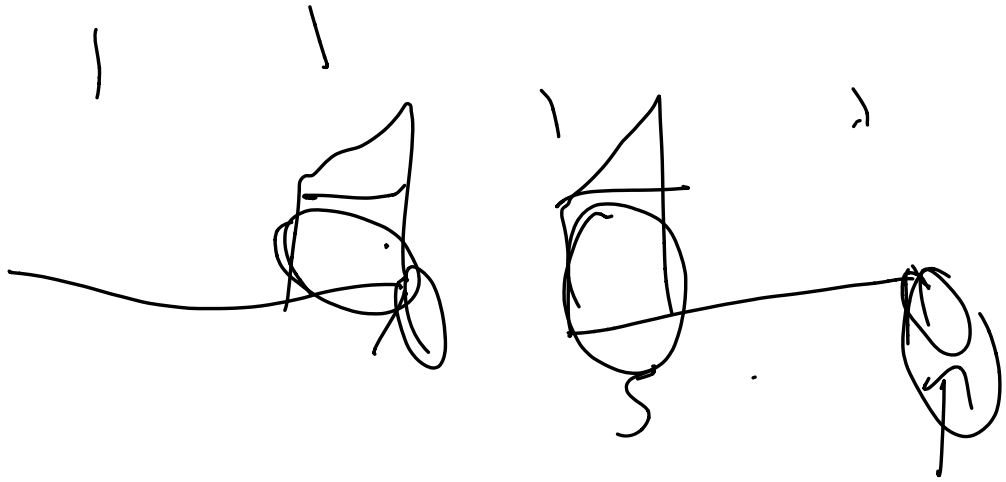
RECESTRUCTURANDO LA EQU. DE LOS 3 MOMENTOS.

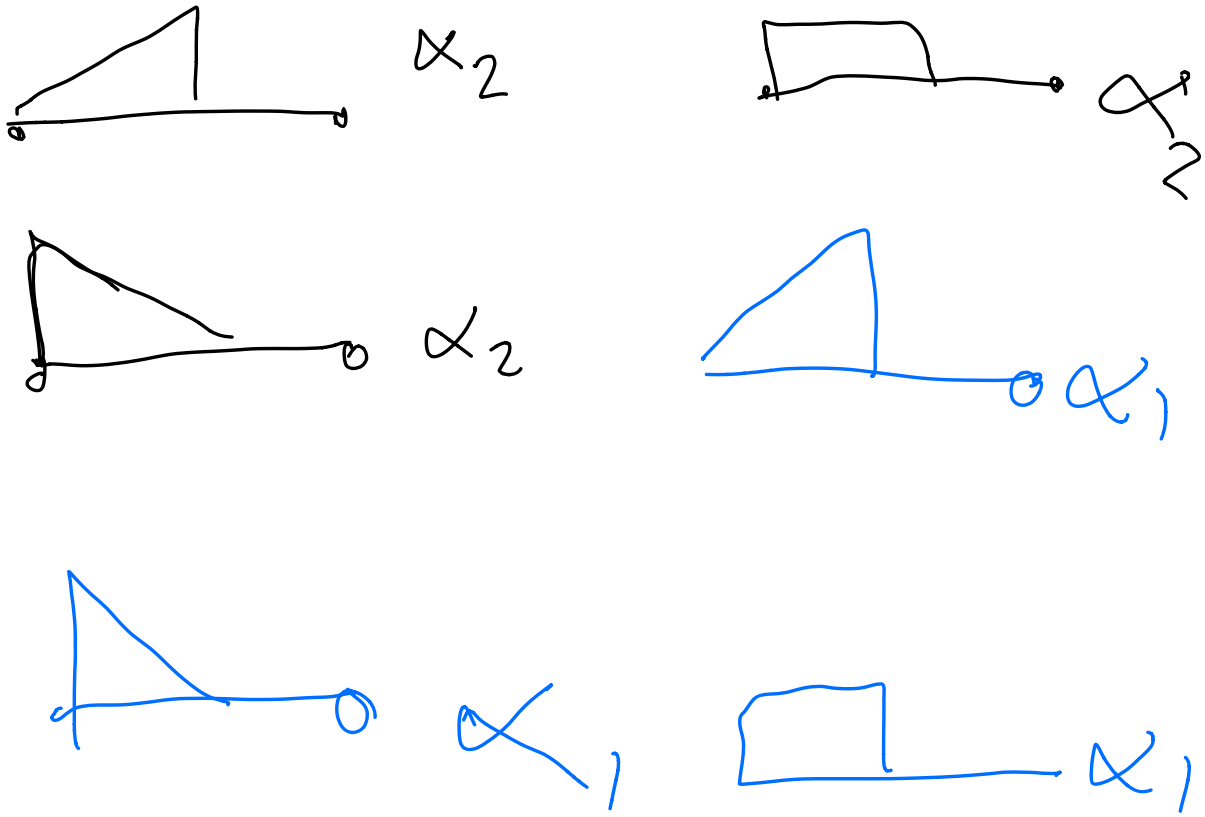
$$L_1 M_1 + 2(L_1+L_2) M_2 + L_2 (M_3) = \boxed{-6(\beta_1+\beta_2)}$$

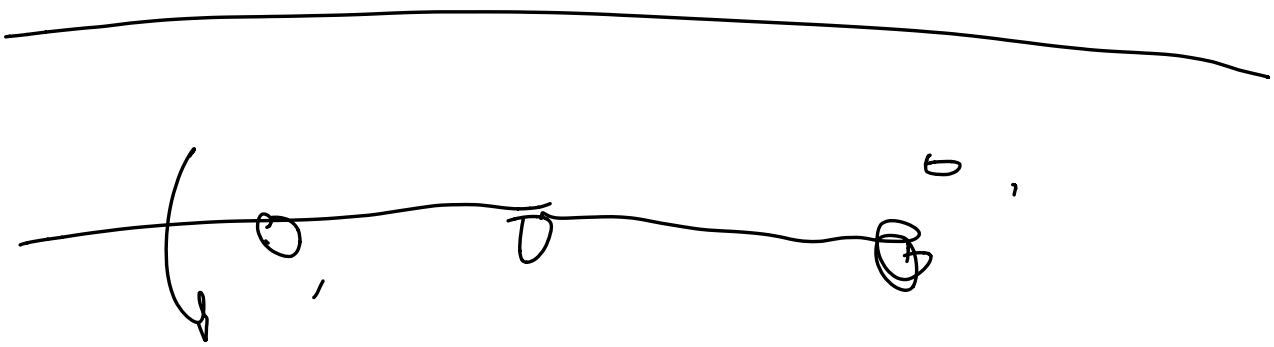
$$\Downarrow$$

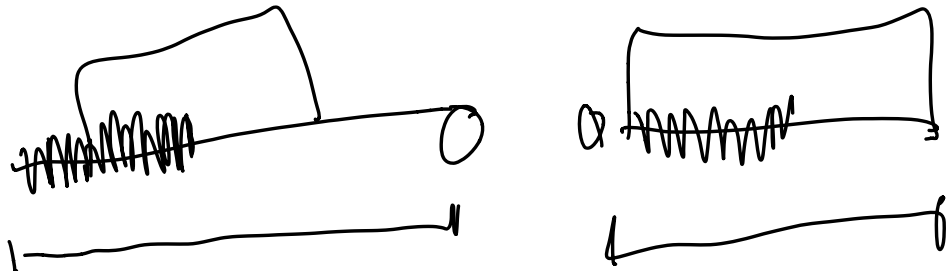
$$a x + b y + c z = d$$

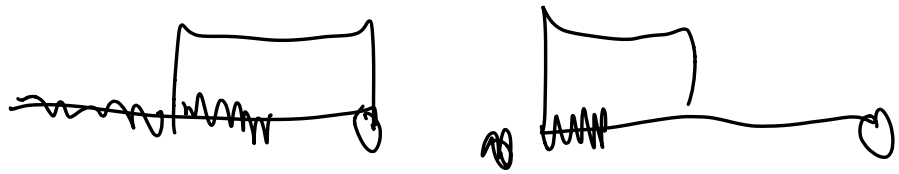





α_2
α_2
α_2
α_1
α_1
α_1







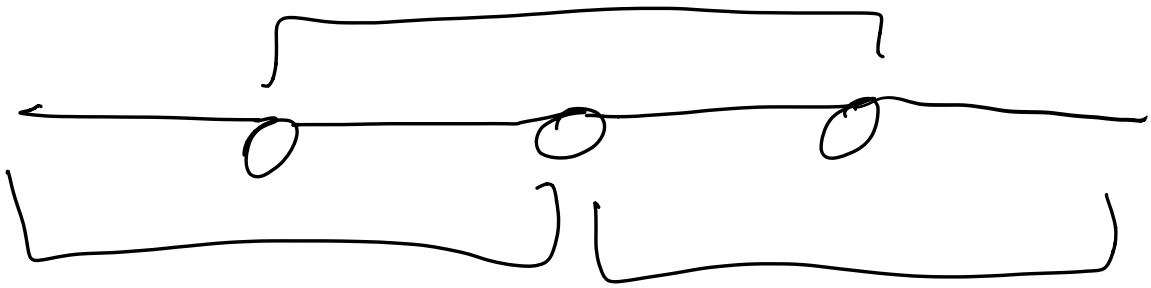
$$w = -6$$

$$2x + 3y + 2z = 1$$

$$5x + 5y + 3z = 2$$

$$-1x + -3y + 7z = 3$$

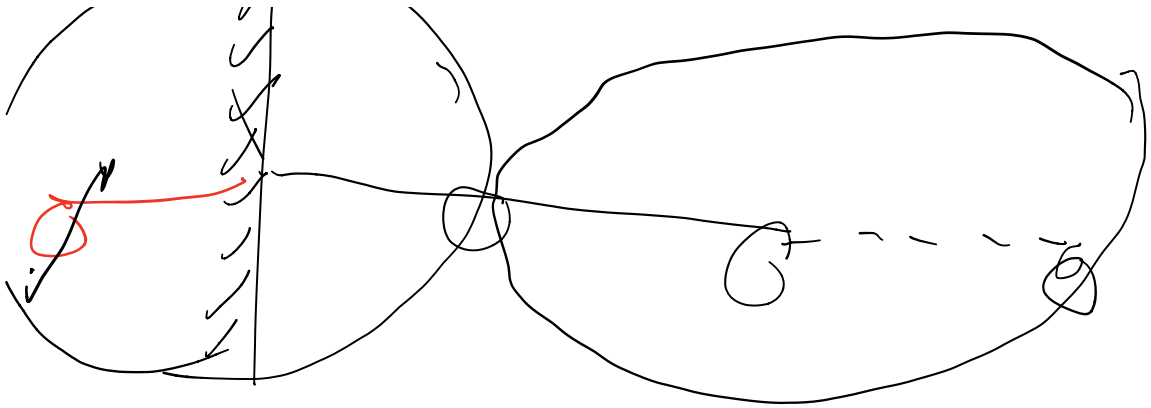
$$\begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 2 & 3 & 2 \\ 0 & 5 & 5 & 3 \\ 0 & -1 & -3 & 7 \end{bmatrix} \begin{bmatrix} w \\ x \\ y \\ z \end{bmatrix} = \begin{bmatrix} -6 \\ 1 \\ 2 \\ 3 \end{bmatrix}$$



$M_1 = NA \qquad M_2 = V.$

$$\begin{array}{c} \\ \\ \\ \end{array}\begin{array}{c} \begin{array}{cccc} & b & c & \end{array} \\ \begin{bmatrix} 1 & 0 & 0 & 0 \\ a_1 & b_1 & c_1 & 0 \\ 0 & 0 & 1 & 0 \end{bmatrix} \\ \begin{array}{cccc} & a & b & c \end{array} \end{array} \begin{bmatrix} b \\ d_1 \\ d_2 \end{bmatrix}$$

$M_0 \qquad M_A \qquad M_B \qquad M_C$

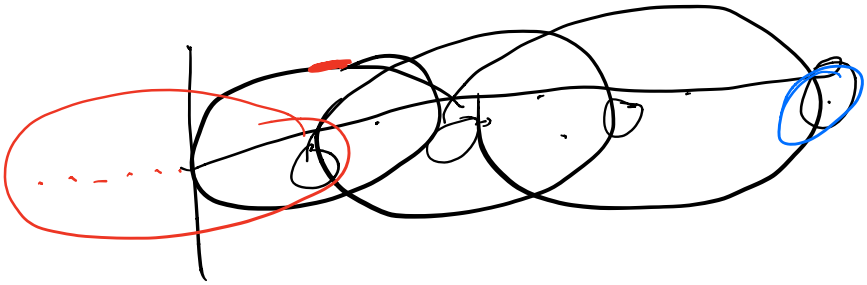


$$M_0 L_1 + 2M_{BA}(L_1 + L_2) + M_B L_2$$

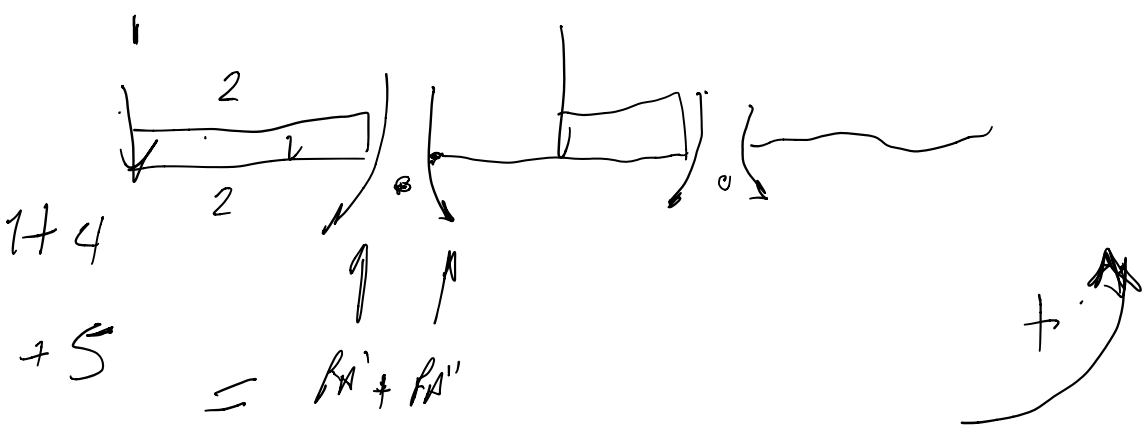
$$= -6(\alpha_1 + \alpha_2)$$

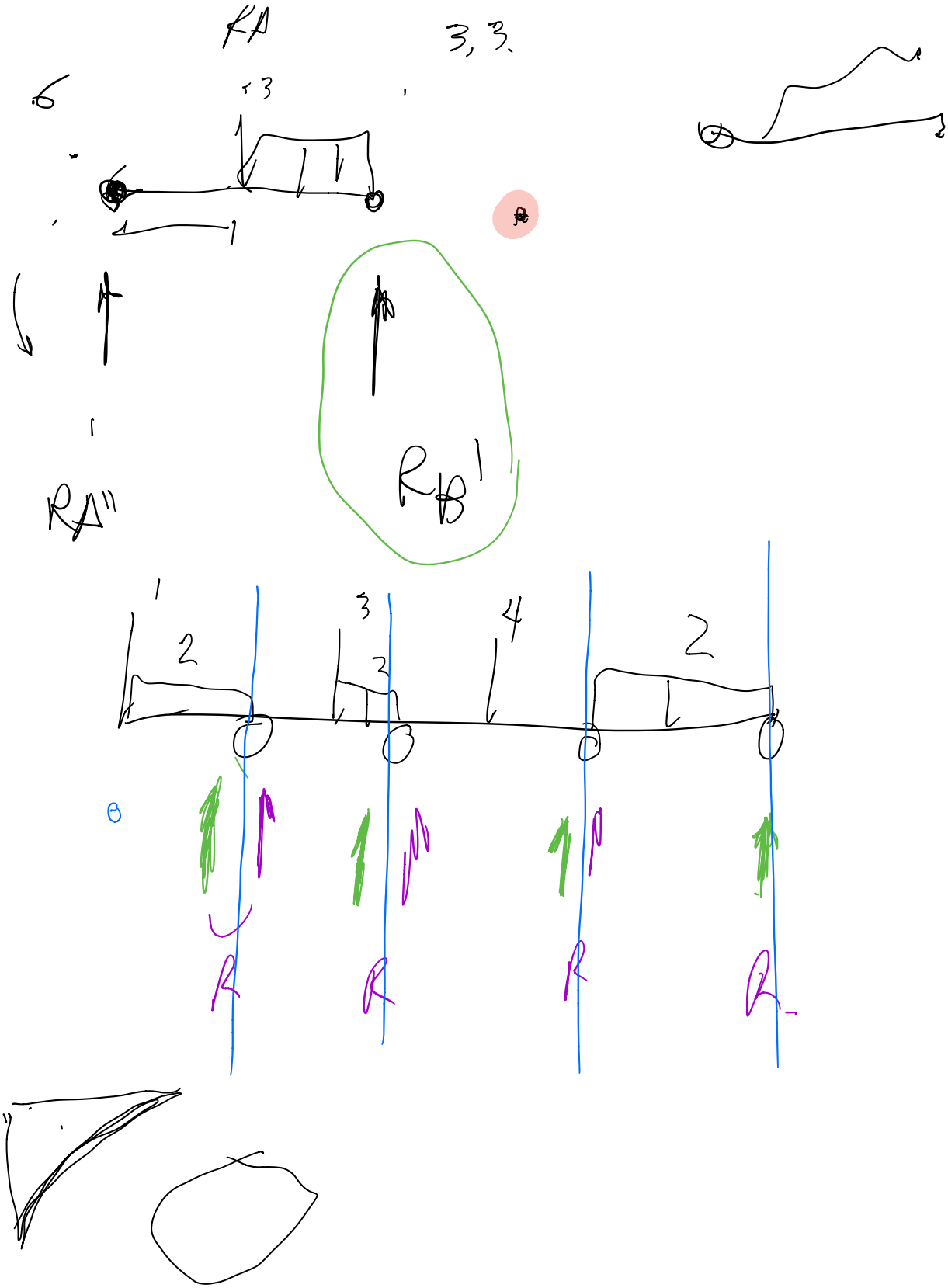
$$2M_A(L_2) + M_B L_2 = -6\alpha_2$$

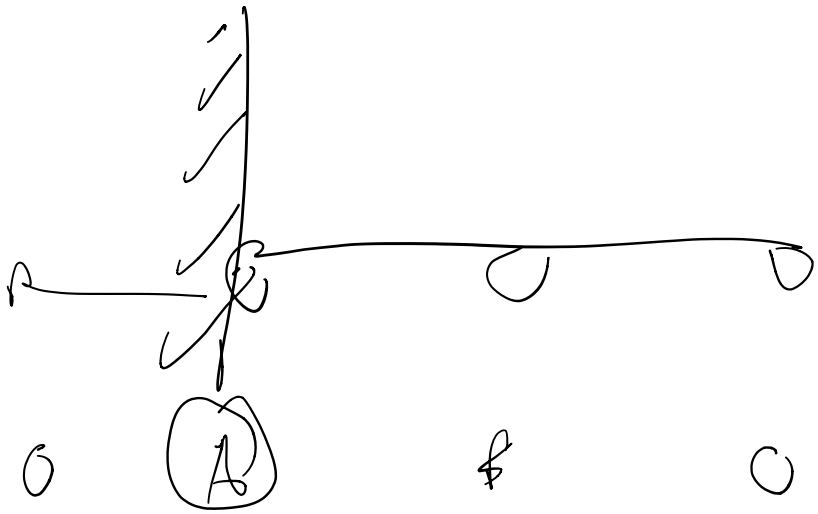
$$\begin{bmatrix} 0 & 0 & 0 \\ 0 & 0 & 0 \end{bmatrix}$$

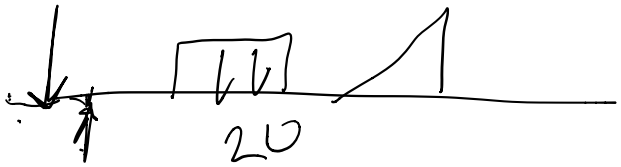


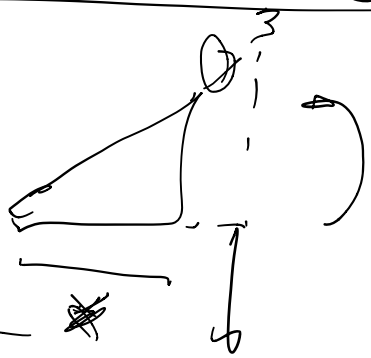
$$\begin{bmatrix} b & c & 0 & 0 & 0 \\ a & b & c & 0 & 0 \\ 0 & a & b & c & 0 \\ 0 & 0 & a & b & c \end{bmatrix} = \begin{matrix} d \\ d \\ d \\ d \end{matrix}$$



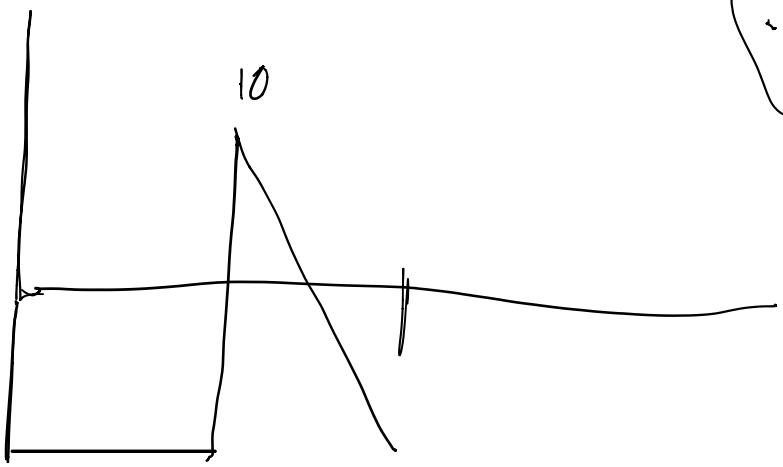

RA
3, 3.
6
3
RA''
RB'
2
3
3
4
2
R
R
R
R



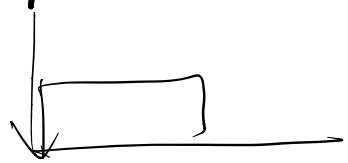


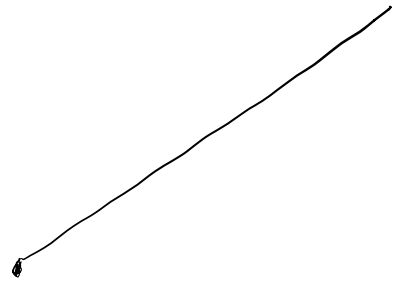


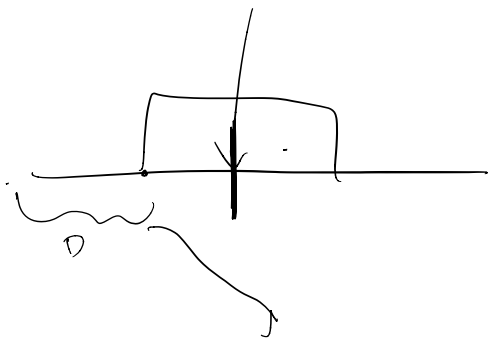
$$\frac{3x}{4} = y$$



GRAFICANDO



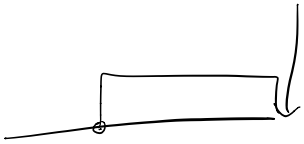


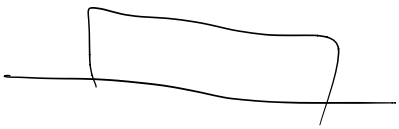


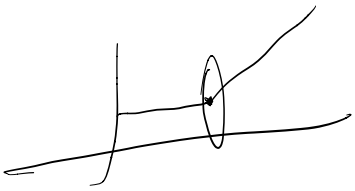
→ DISTRIBUIDA, DISTANCIA, 0

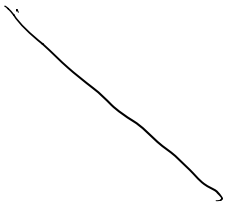
→ PUNTUAL, DISTANCIA

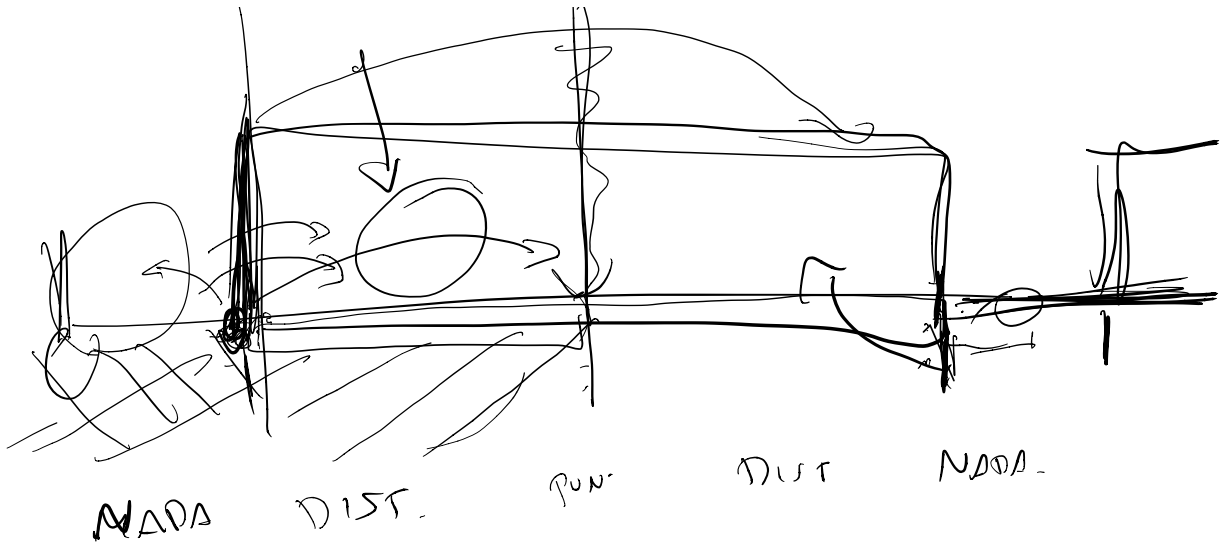
DISTRIBUIDA, D + L_i, −K











SWITCH = V

CASO 1 NEXT NO DIST ∧ SWITCH F.

NADA, AREA DERECHA

CASO 2 NEXT SI DIST ∧ SWITCH F

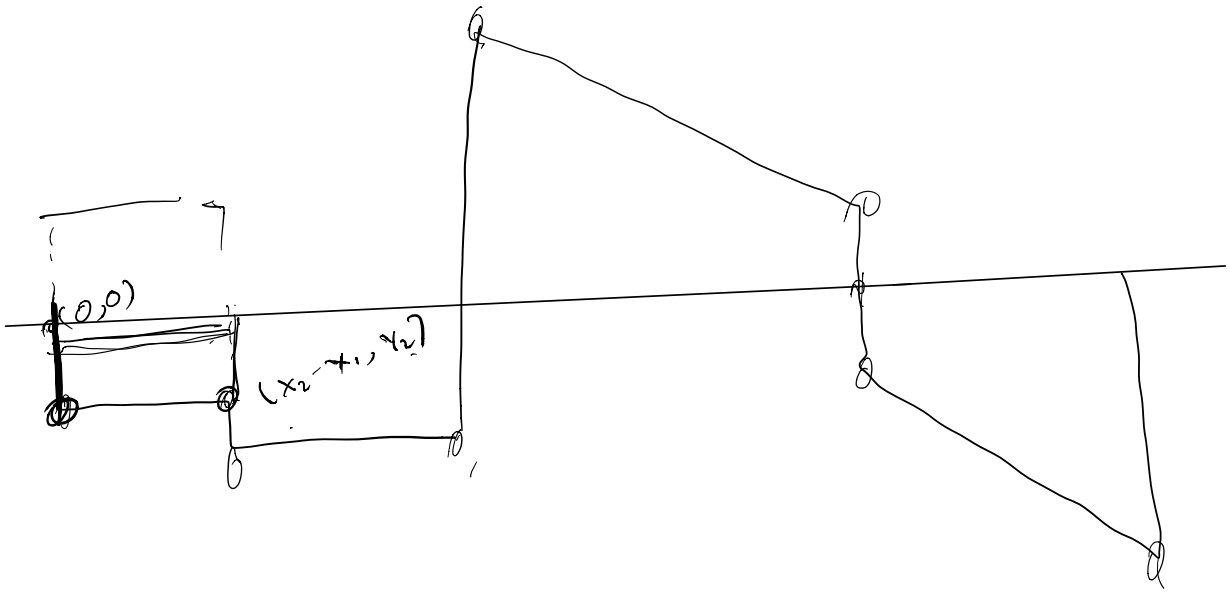
NADA, AREA DERECHA

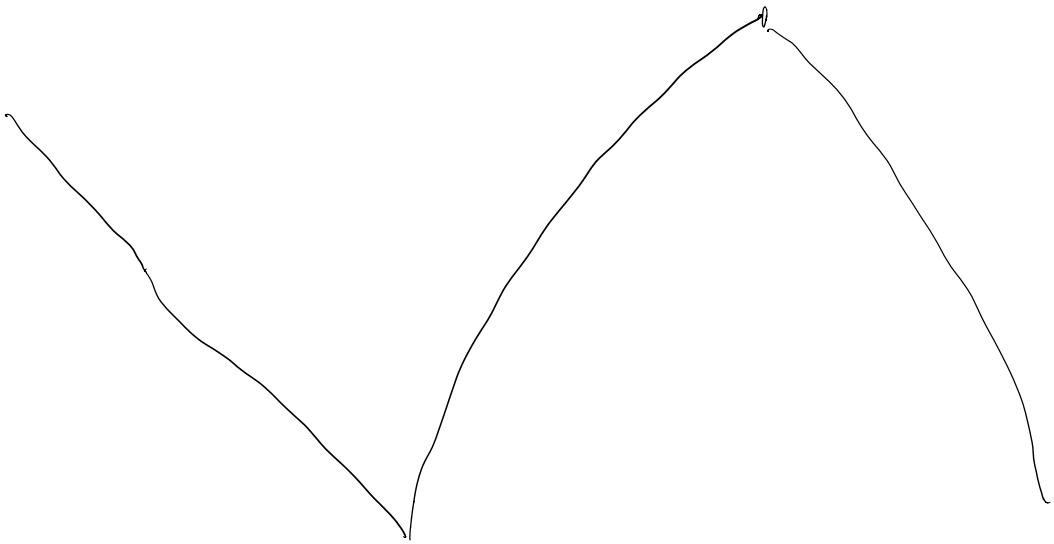
CASO 3 NEXT NO DIST ∧ V.

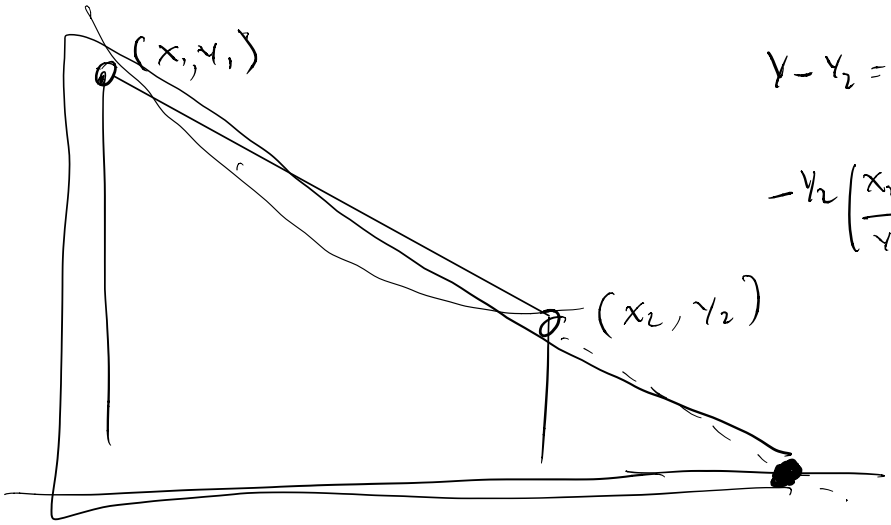
IZQUIERDA, NADA

CASO 4 SI DIST ∧ V

NADA.

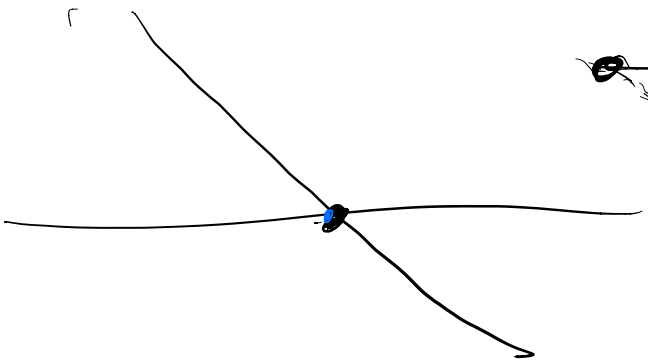

(0,0)
(x2-x1, y2)

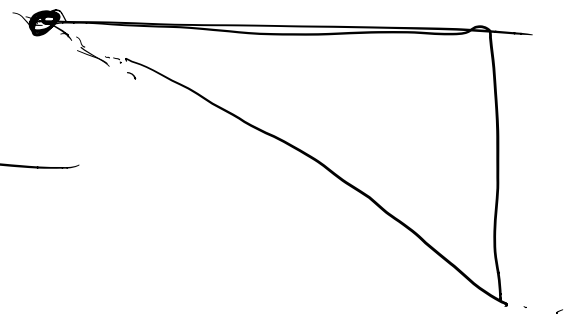


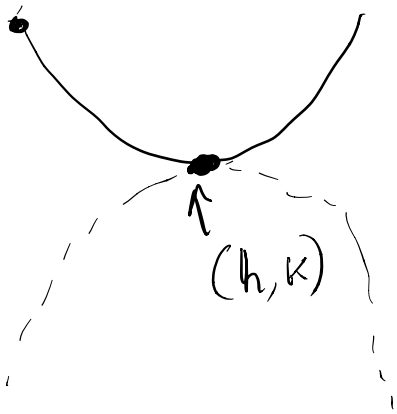


$$y - y_2 = \frac{y_2 - y_1}{x_2 - x_1}(x - x_2)$$

$$-y_2\left(\frac{x_2 - x_1}{y_2 - y_1}\right) + x_2 = x$$





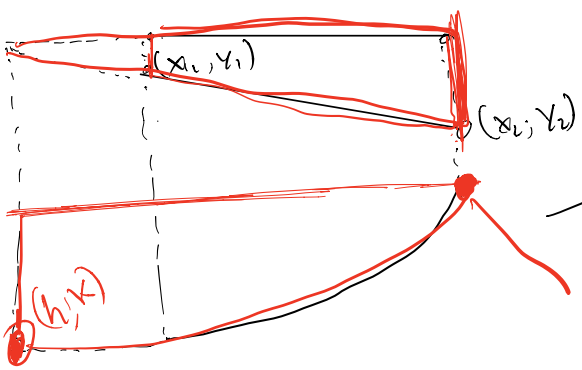


$$(x - h)^2 = 4c(y - k)$$

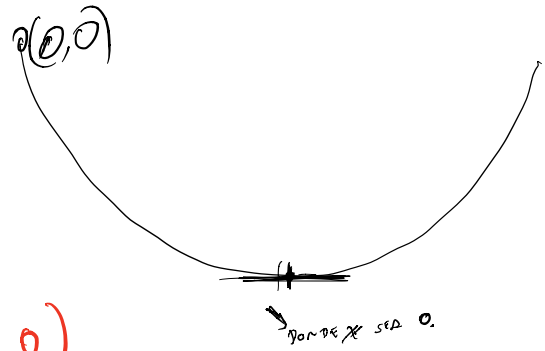
$$c = \frac{(x - h)^2}{4(y - k)} = \frac{(-h)^2}{4(-k)}$$

$$(x-h)^2 = \frac{\cancel{4}(-h)^2}{\cancel{4}(-k)}(y-k)$$

$$\boxed{\frac{(x-h)^2(-k)}{(-h)^2} + k = y}$$



$(\quad , 0)$



$$y - y_2 = \frac{y_2 - y_1}{x_2 - x_1}(x - x_2)$$

PARA QUE $y = 0$,

$$0 - y_2 = \frac{y_2 - y_1}{x_2 - x_1}(x - x_2)$$

$$\Rightarrow -y_2\left(\frac{x_2 - x_1}{y_2 - y_1}\right) + x_2 = x = V_x$$

$$\Rightarrow V_y = \frac{(x_2 - V_x)\, y_2}{2}$$

VERTICE

PASA POR EL PUNTO $(x_2, 0)$

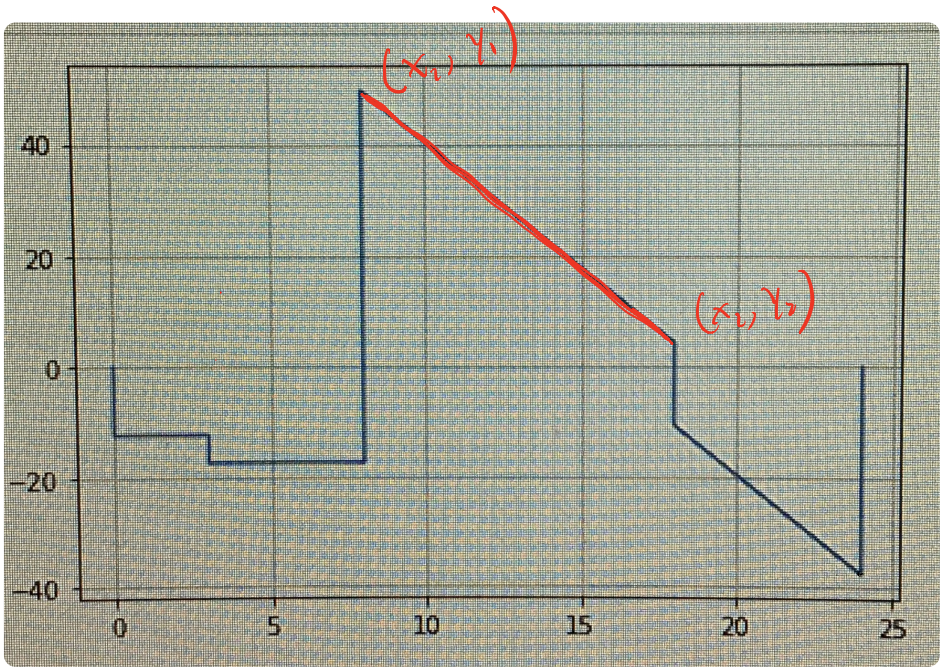
$$c = \frac{(x-h)^2}{4(y-k)} = \frac{(x_2-h)^2}{4(0-k)} = \frac{(x_2-h)^2}{-4k}$$

PARÁBOLA:

$$(x-h)^2 = 4c(y-k)$$

$$(x - V_x)^2 = \frac{\cancel{4}(x_2-h)^2}{-\cancel{4}k}(y - V_y)$$

$$\boxed{(x - V_x)^2\left(\frac{-k}{(x_2-h)^2}\right) + V_y = y}$$



$V = (h, k)$

$$y = \frac{y_2 - y_1}{x_2 - x_1} x - \frac{y_2 - y_1}{x_2 - x_1} x_2 + y_2$$

$$y' = \underbrace{\frac{y_2 - y_1}{2(x_2 - x_1)}}_{a} x^2 \underbrace{- \frac{y_2 - y_1}{x_2 - x_1} x_2}_{b} x + \underbrace{y_2}_{d} x + c$$

$$k = ah^2 + bh + dh + c.$$

$$c = k - (ah^2 + bh + dh)$$

$$y' = ax^2 + bx + dx + c$$