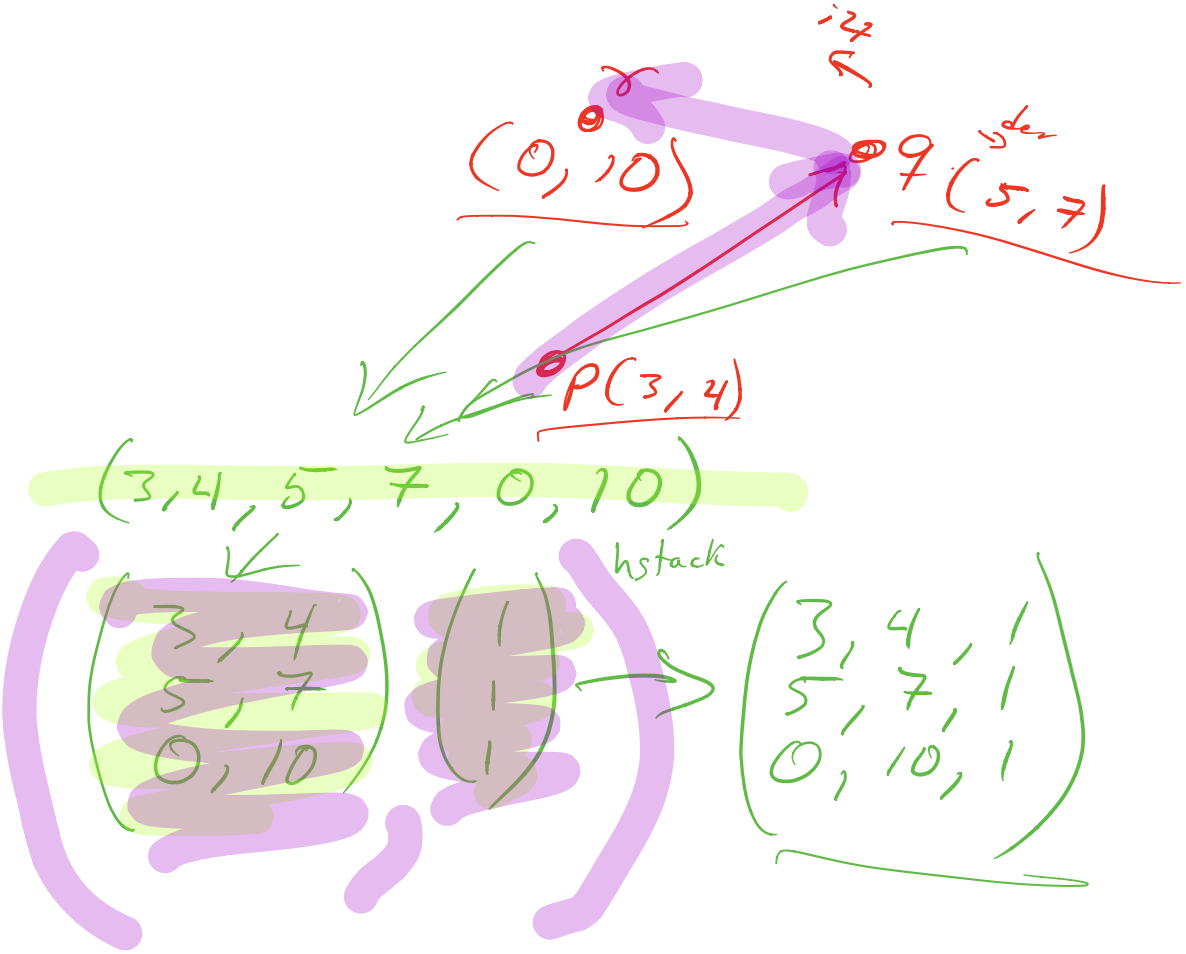
Envolvente convexa

izquierda (p, q, r)



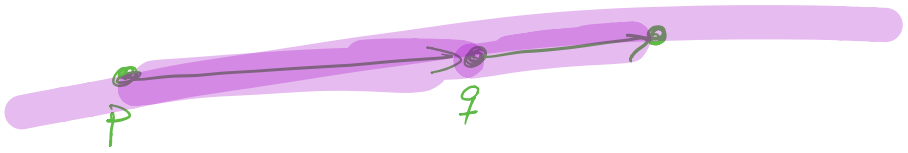
$$\begin{vmatrix} 3 & 4 & 1 \\ 5 & 7 & 1 \\ 0 & 10 & 1 \end{vmatrix} = 3\cdot 7\cdot 1 + 4\cdot 1\cdot 0 + 5\cdot 10\cdot 1 - 7\cdot 1\cdot 0 - 5\cdot 4\cdot 1$$

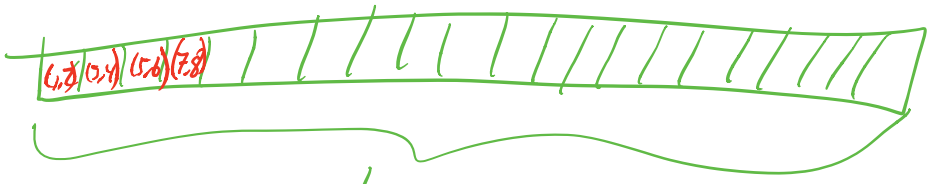
$$3\cdot 10\cdot 1 = 21 + 0 + 50 - 0 - 20 - 30$$

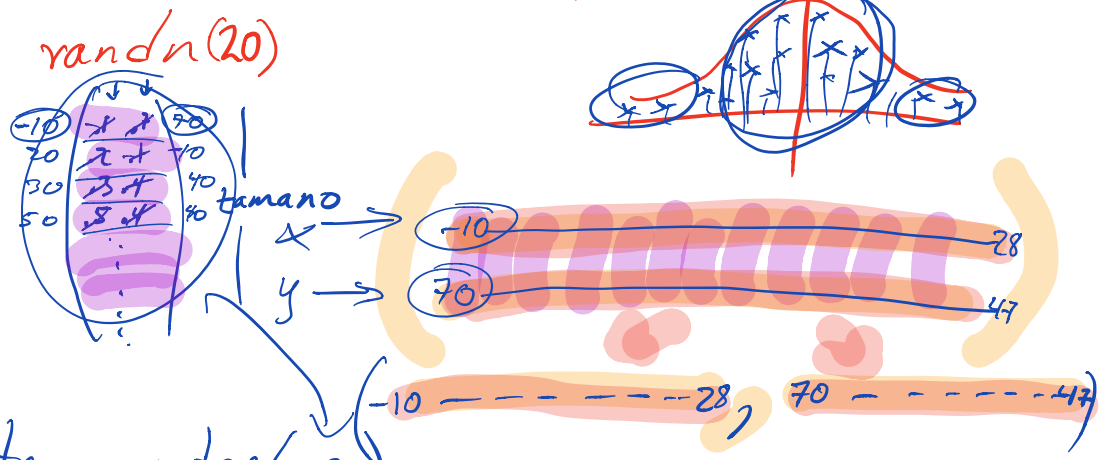
$$= 21$$

$$2e\text{-}15 = 2\times 10^{-15} = \frac{2}{1000000000000000}$$

$$= 0.000000000000002$$







muestra_puntos(p)

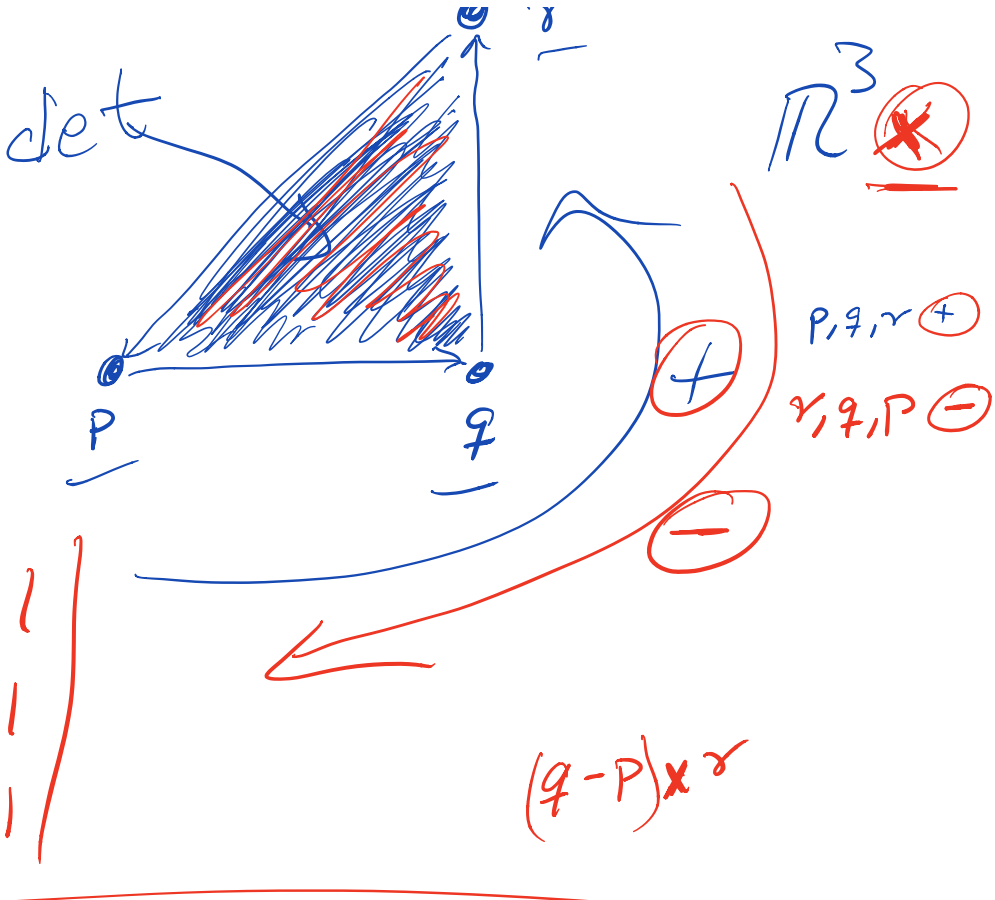
f = "nada"

f.circle(*p.T)

↑ transpuesta de p

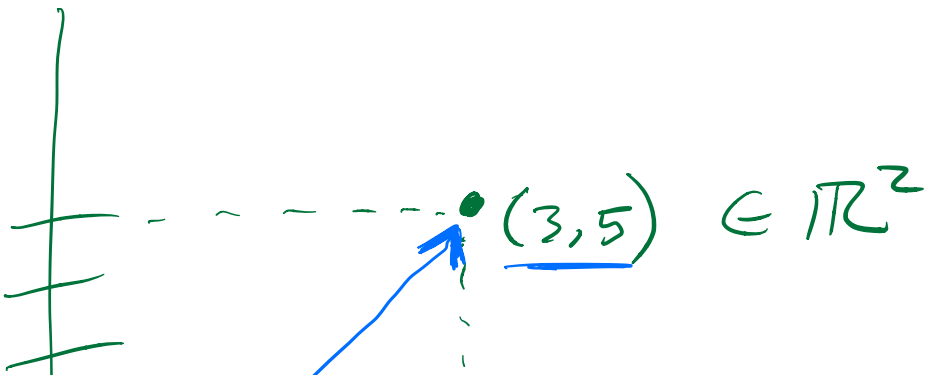
f.circle([-----], [-----])

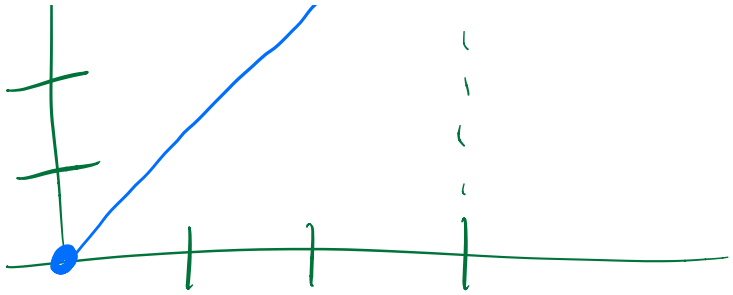
x_s y_s



Cormen

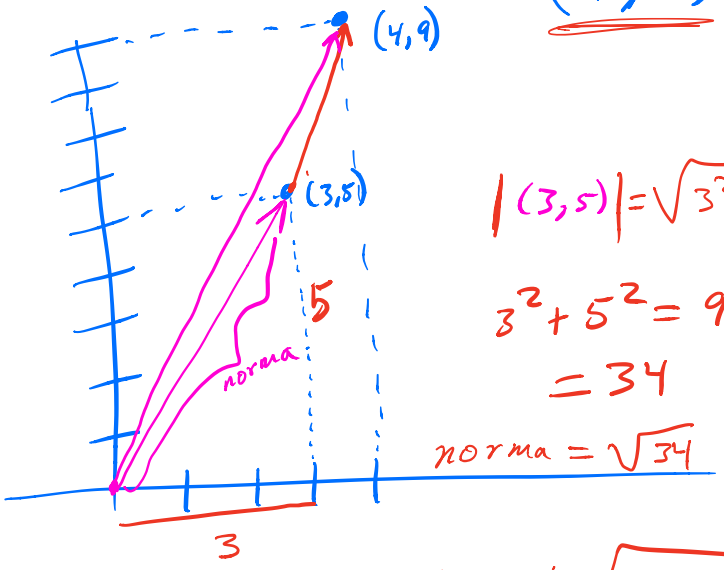
Algorithms





$(4,9)-(3,5) = (4-3, 9-5)$

$= (1, 4)$



$|(3,5)| = \sqrt{3^2+5^2}$

$3^2+5^2 = 9+25$

$= 34$

$norma = \sqrt{34}$

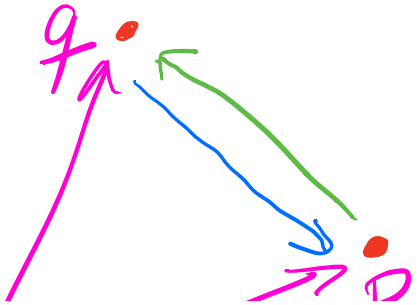
$|(4,9)| = \sqrt{4^2+9^2}$

$= \sqrt{16+81}$

$= \sqrt{97}$

$|(1,4)| = \sqrt{1^2+4^2}$

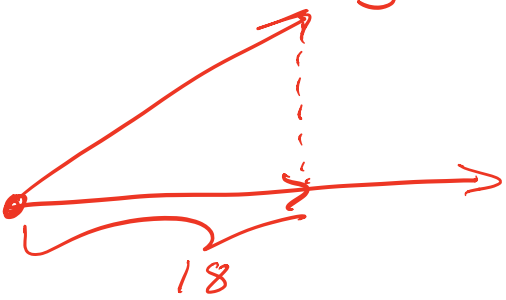
$= \sqrt{17}$

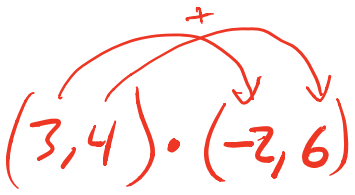


$q-p \rightarrow$ verde

$p-q \rightarrow$ azul

Producto Punto



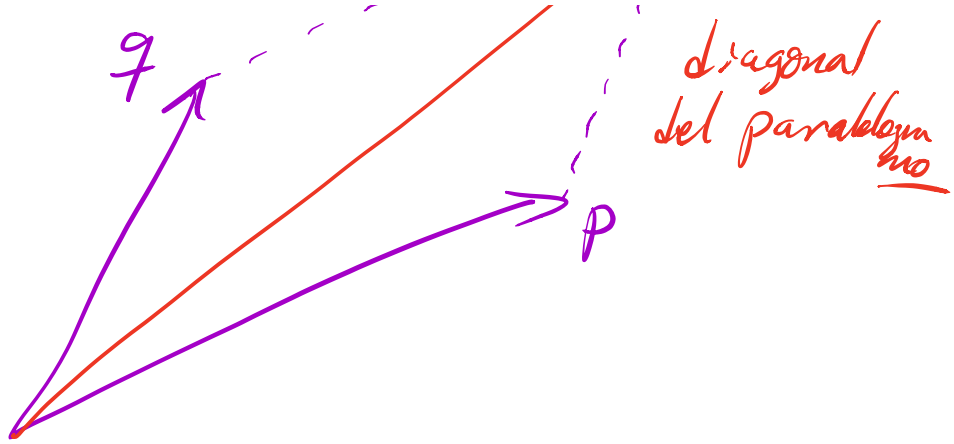


$a = 3\cdot(-2)+(4\cdot 6)$

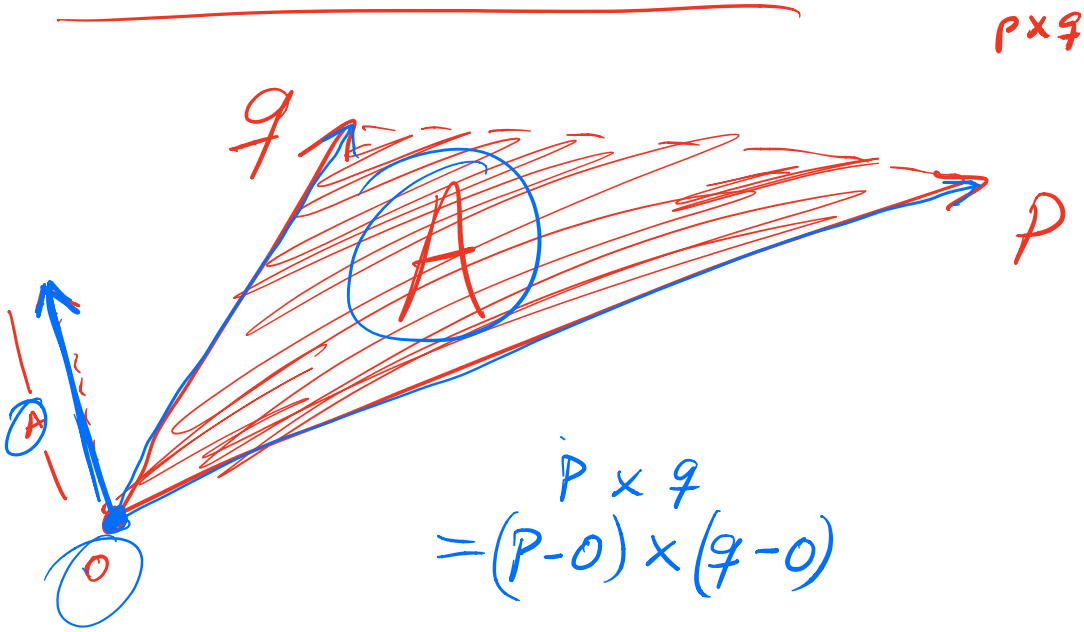
$= -6+24$

$= 18$

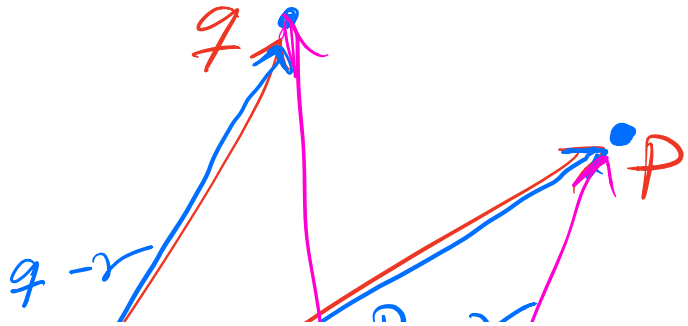
Suma

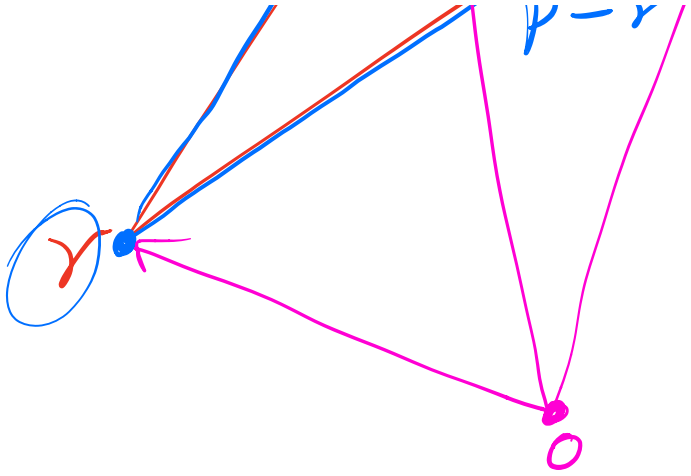


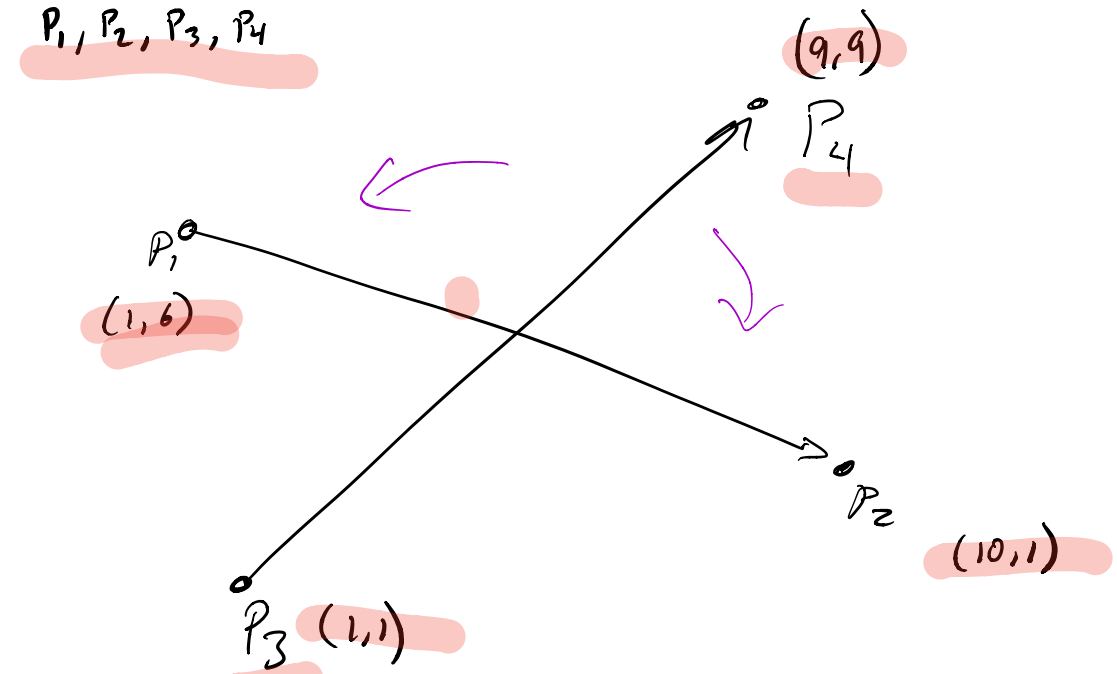
Producto Cruz



$$p \times q = (p-0) \times (q-0)$$







(d1) izq $(P_3, P_4, P_1) \to +$ (y) — P_1 a la izq de P_3P_4

(d2) izq $(P_3, P_4, P_2) \to -$ (y) — P_2 a la der de P_3P_2

(d1) izq $(P_3, P_4, P_1) \to -$ (y) — P_1 a la der P_3P_4

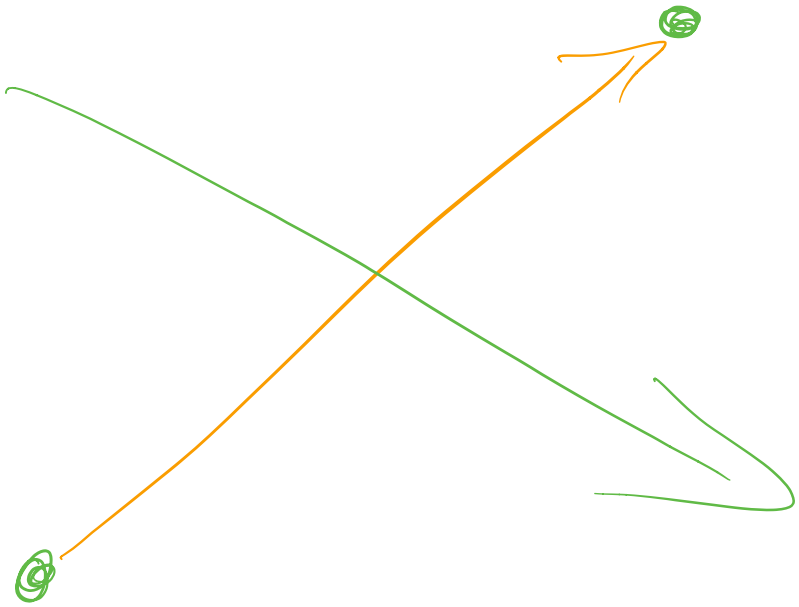
(d2) izq $(P_3, P_4, P_2) \to +$ — P_2 a la izq P_3P_4

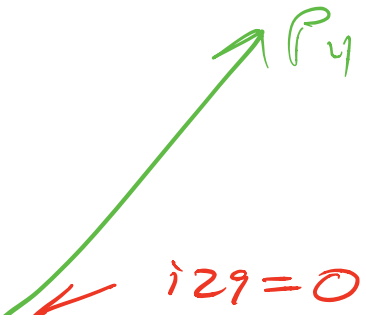
(d_3) izq $(P_1, P_2, P_3) \rightarrow +$ P_3 a la izq de $P_1 P_2$

(d_4) izq $(P_1, P_2, P_4) \rightarrow -$ P_4 a la der de $P_1 P_2$

(d_3) izq $(P_1, P_2, P_3) \rightarrow -$ P_3 a la der de $P_1 P_2$

(d_4) izq $(P_1, P_2, P_4) \rightarrow +$ P_4 a la izq de $P_1 P_2$





return num > 2e-15 #morgen

TRUE

FALSO