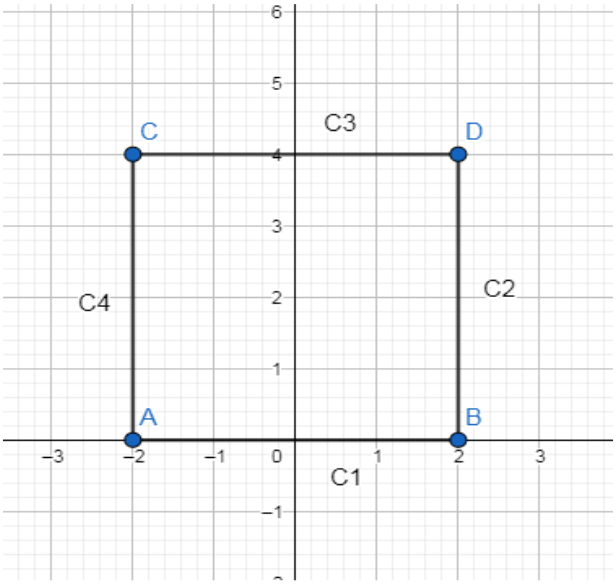
Resolución TP8:

Ejercicio 3-b

Parametrizar las siguientes curvas regulares a trozos:

C es el cuadrado de vértices $\begin{cases} A = (-2,0) \\ B = (2,0) \\ C = (-2,4) \\ D = (2,4) \end{cases}$



$$\begin{cases} A = (-2,0) \\ B = (2,0) \\ C = (-2,4) \\ D = (2,4) \end{cases}$$

Método I (Parametrizacion directa)

$$C3:\begin{cases}(-2,4)\to(2,4)\\ r_3(t)=(t,4)\\ -2\le t\le 2\\ Sentido-\end{cases}$$

Verificación:

$r_3(-2)=(-2,4)=C$

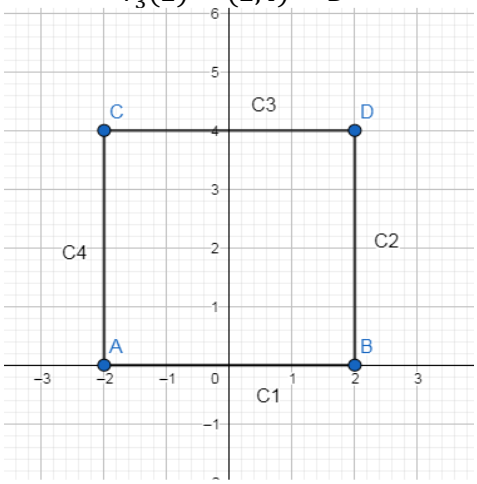
$r_3(2)=(2,4)=D$

$$C4:\begin{cases}(-2,0)\to(-2,4)\\ r_4(t)=(-2,t)\\ 0\le t\le 4\\ Sentido-\end{cases}$$

Verificación:

$r_4(0)=(-2,0)=A$

$r_4(4)=(-2,4)=C$



$$C2:\begin{cases}(2,0)\to(2,4)\\ r_2(t)=(2,t)\\ 0\le t\le 4\\ Sentido+\end{cases}$$

Verificación:

$r_2(0)=(2,0)=B$

$r_2(4)=(2,4)=D$

$$C1:\begin{cases}(-2,0)\to(2,0)\\ r_1(t)=(t,0)\\ -2\le t\le 2\\ Sentido+\end{cases}$$

Verificación:

$r_1(-2)=(-2,0)=A$

$r_1(2)=(2,0)=B$

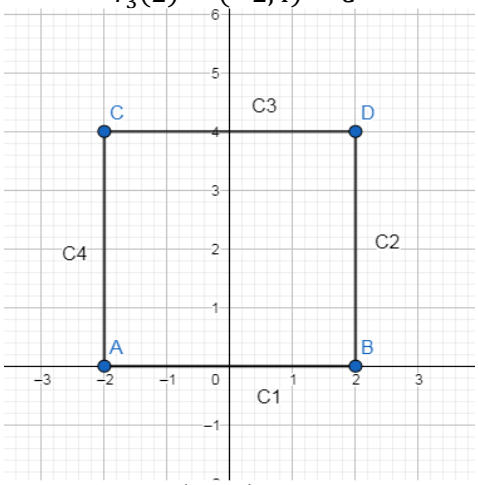
Método II (Parametrizacion directa en sentido +)

$$C3:\begin{cases}(2,4)\to(-2,4)\\ r_3(t)=(-t,4)\\ -2\le t\le 2\\ Sentido+\end{cases}$$

Verificación:

$r_3(-2)=(2,4)=D$

$r_3(2)=(-2,4)=C$



$$C4:\begin{cases}(-2,0)\to(-2,4)\\ r_4(t)=(-2,4-t)\\ 0\le t\le 4\\ Sentido+\end{cases}$$

Verificación:

$r_4(0)=(-2,4)=C$

$r_4(4)=(-2,0)=A$

$$C2:\begin{cases}(2,0)\to(2,4)\\ r_2(t)=(2,t)\\ 0\le t\le 4\\ Sentido+\end{cases}$$

Verificación:

$r_2(0)=(2,0)=B$

$r_2(4)=(2,4)=D$

$$C1:\begin{cases}(-2,0)\to(2,0)\\ r_1(t)=(t,0)\\ -2\le t\le 2\\ Sentido+\end{cases}$$

Verificación:

$r_1(-2)=(-2,0)=A$

$r_1(2)=(2,0)=B$

Método III (Usando ecuación de la recta $r_{\overrightarrow{P_0P_f}} = P_0 + t(P_f - P_0)$)

$$C3: \begin{cases} r_3(t) = D + t(C - D) \\ r_3(t) = (-4t + 2,4) \\ 0 \le t \le 1 \\ Sentido + \end{cases}$$

Verificación:

$r_3(0) = (2,4) = D$

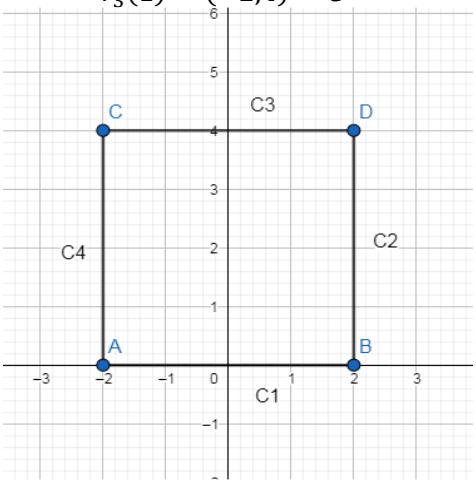
$r_3(1) = (-2,4) = C$

$$C4: \begin{cases} r_4(t) = C + t(A - C) \\ r_4(t) = (-2, -4t + 4) \\ 0 \le t \le 1 \\ Sentido + \end{cases}$$

Verificación:

$r_4(0) = (-2,4) = C$

$r_4(1) = (-2,0) = A$



$$C2: \begin{cases} r_2(t) = B + t(D - B) \\ r_2(t) = (2,4t) \\ 0 \le t \le 1 \\ Sentido + \end{cases}$$

Verificación:

$r_2(0) = (2,0) = B$

$r_2(1) = (2,4) = D$

$$C1: \begin{cases} r_1(t) = A + t(B - A) \\ r_1(t) = (4t - 2,0) \\ 0 \le t \le 1 \\ Sentido + \end{cases}$$

Verificación:

$r_1(0) = (-2,0) = A$

$r_1(1) = (2,0) = B$