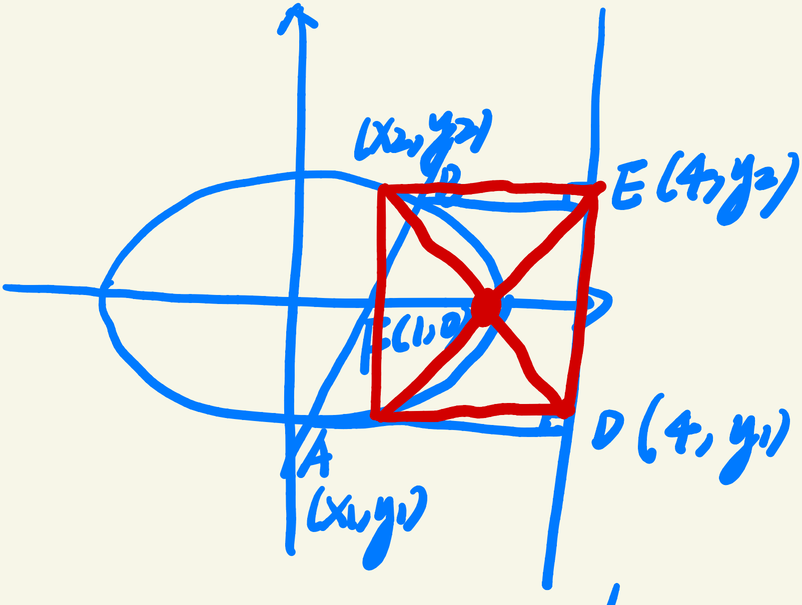


l_{AE}与l_{BD}相交于定点.(是否)

设 $x=ty+1$
- t不存在 A(-2,0) B(2,0) D(4,0) E(4,0)
  l_{AE}. l_{BD} → x轴 重合 (舍)

设 $y=kx+b$
- k不存在 → $(\frac{5}{2},0)$
- k存在 → 证明l_{AE}与l_{BD}相交于$(\frac{5}{2},0)$ K

证 $(\frac{5}{2},0)$ 在 l_{AE} 上 $\Longleftrightarrow$ 证 $\overrightarrow{AK} \parallel \overrightarrow{KE}$

证 $(\frac{5}{2},0)$ 在 l_{BD} 上 $\Longleftrightarrow$ 证 $\overrightarrow{BK} \parallel \overrightarrow{KD}$ 同理.

$\overrightarrow{AK}=(\frac{5}{2}-x_1,-y_1)$

$\overrightarrow{KE}=(\frac{3}{2},y_2)$ $\quad x=ty+1$

$\cancel{(\frac{5}{2}-x_2)y_1-\frac{3}{2}(-y_2)=0}$

证 $(\frac{5}{2}-x_1)y_2-\frac{3}{2}(-y_1)\overset{?}{=}0$

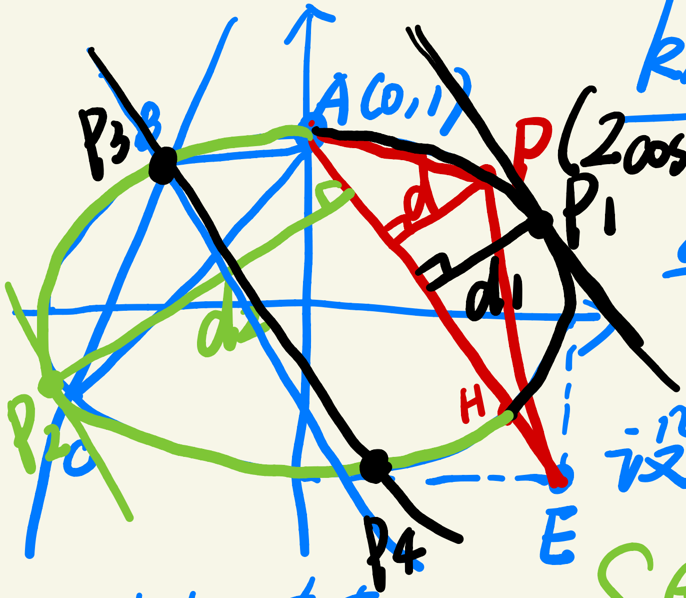
$=(\frac{5}{2}-ty_1-1)y_2+\frac{3}{2}y_1$

$=\frac{3}{2}(y_1+y_2)-ty_1y_2\overset{?}{=}0$

证 $1+1=2$ $\Longrightarrow$ 证 $3+3=6$

$2+2=4$ $\Longleftrightarrow$

$\not\Longleftarrow$



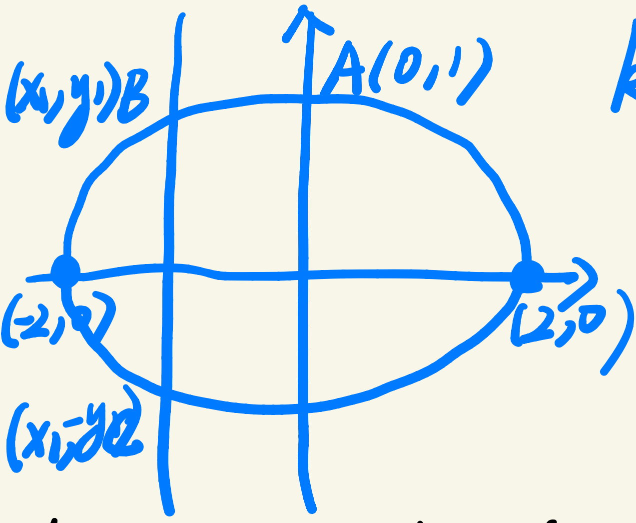
$k_{AB}+k_{AC}=-1$

$\dfrac{y_1-1}{x_1}+\dfrac{y_2-1}{x_2}=-1$

设 $l_{BC}: y=kx+b$

$S\in(0, S_{\triangle AP_2E}]$

① 当k不存在.



$k_{AB}+k_{AC}=-1$

$\Downarrow$

$x_1=2$ (舍)

$E(2,-1)$

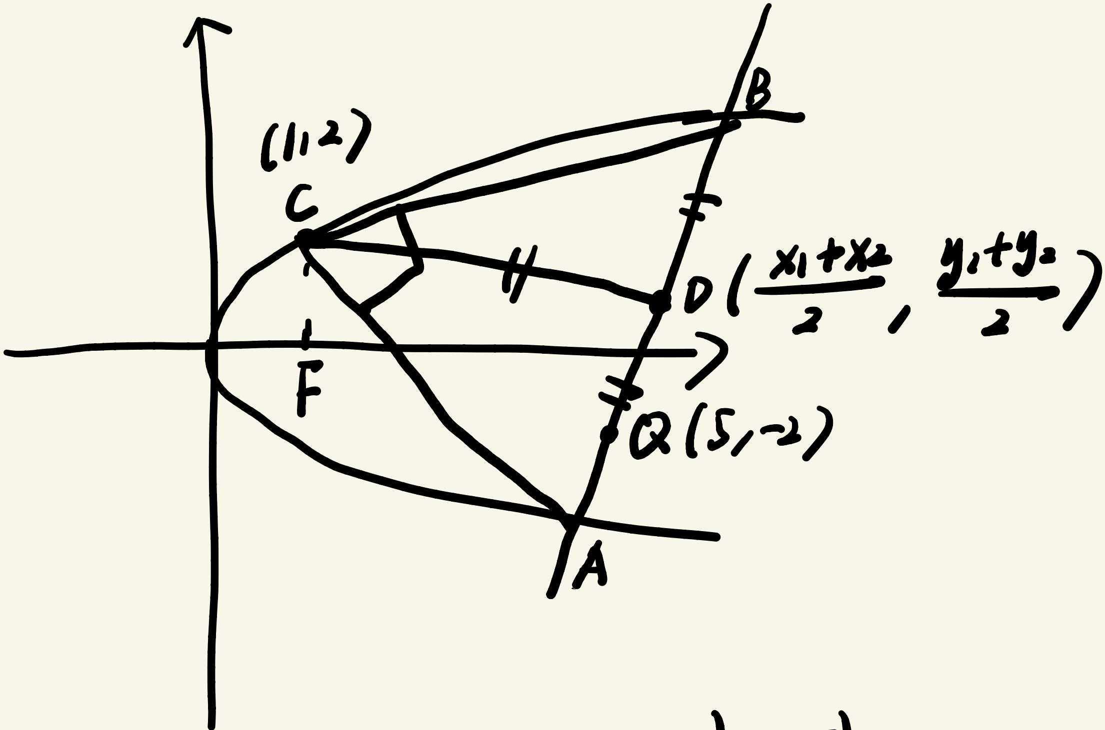
$l_{AE}: y=-1x+1 \quad P(2\cos\theta, \sin\theta) \quad \theta\in[0,2\pi)$

$2\cos\theta+\sin\theta$

$$d=\frac{|2\cos\theta+\sin\theta-1|}{\sqrt{2}} \qquad [-\sqrt{5}-1, \sqrt{5}-1] \to [0, \sqrt{5}+1]$$

$$2\cos\theta+\sin\theta=\sqrt{5}\sin(\theta+\varphi)\in[-\sqrt{5}, \sqrt{5}]$$

$d_1=\dfrac{\sqrt{5}-1}{\sqrt{2}} \qquad d_2=\dfrac{\sqrt{5}+1}{\sqrt{2}}$



$|AB| = 2|CD| \Longleftrightarrow \vec{CB}\cdot\vec{CA}=0$

设 $x-5=t(y+2)$ → t不存在(舍)

→ t存在

$y+2=k(x-5)$ → k不存在 算

→ k存在 算