

5.81 Vertices

$$\begin{cases} x+3y=14 \\ 3x-5y=-14 \end{cases} \left\} A(2,4)\right.$$

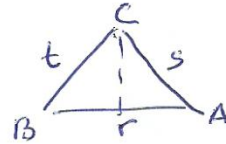
$$\begin{cases} x+3y=14 \\ 2x-y=-7 \end{cases} \left\} B(-1,5)\right.$$

$$\begin{cases} 3x-5y=-14 \\ 2x-y=-7 \end{cases} \left\} C(-3,1)\right.$$

base $\rightarrow d(A,B) = \sqrt{9+1} = \sqrt{10} u$.

altura $\rightarrow d(C, r) = \frac{1-3+3-14}{\sqrt{10}} = \frac{14}{\sqrt{10}} = \frac{7\sqrt{10}}{5} u$

$$\text{Area} = \frac{b \cdot a}{2} = \frac{\sqrt{10} \cdot \frac{14}{\sqrt{10}}}{2} = \underline{\underline{7 u^2}}$$

5.83 $A(4,3)$ $B(6,-3)$ $C(6,k)$ $A=20 u^2$.
k?

1. base $\rightarrow |\vec{AB}| = \sqrt{(6-4)^2 + (-3-3)^2} = \sqrt{4+36} = \sqrt{40} u$

altura
 $\vec{AB} = (2, -6)$
 $(1, -3)$
 $r_{AB} \rightarrow \frac{x-4}{1} = \frac{y-3}{-3} \Rightarrow 3x+y-15=0$.

$$d(C, r_{AB}) = \frac{|18+k-15|}{\sqrt{10}} = \frac{|3+k|}{\sqrt{10}} u$$

Area $\rightarrow S = \frac{\sqrt{40} \cdot |3+k|}{\sqrt{10}} = 20$

$$\begin{aligned} \& \frac{-\sqrt{40} \cdot (3+k)}{\sqrt{10}} = 20 & \frac{\sqrt{40} \cdot (3+k)}{\sqrt{10}} = 20 \\ -3-k = 10 & 3+k = 10 \\ \boxed{k = -13} & \boxed{k = 7} \end{aligned}$$

5.85 $A(0,3) B(1,0) C(6,1)$

$M_{AC} \rightarrow M\left(\frac{6}{2}, \frac{3+1}{2}\right) = (3, 2)$

$$\begin{array}{l} B(1,0) \\ M(3,2) \\ D(a,b) \end{array} \left\{ \begin{array}{l} \frac{1+a}{2} = 3 \Rightarrow a=5 \\ \frac{0+b}{2} = 2 \Rightarrow b=4 \end{array} \right. \quad \boxed{D(5,4)}$$

Diagonales

$|\vec{AC}| = \sqrt{(6-0)^2 + (1-3)^2} = \sqrt{36+4} = 2\sqrt{10} u$

$|\vec{BD}| = \sqrt{(5-1)^2 + (4-0)^2} = \sqrt{16+16} = 4\sqrt{2} u$

$\cos \alpha = \frac{\vec{AC} \cdot \vec{BD}}{|\vec{AC}| \cdot |\vec{BD}|} = \frac{6 \cdot 4 + (-2 \cdot 4)}{2\sqrt{10} \cdot 4\sqrt{2}} = \frac{16}{2\sqrt{10} \cdot 4\sqrt{2}} = 0,447$
 $\alpha = 63,43^\circ$

5.86

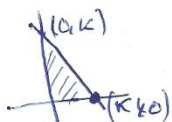
$x+y=k, \Delta = 5u^2$

$x=0 \rightarrow y=k, (0,k)$

$y=0 \rightarrow x=k, (k,0)$

$\Delta_{\text{area}} = \frac{k \cdot k}{2} = \frac{k^2}{2} = 5$

$k^2 = 10 \quad \boxed{k = \sqrt{10}}$



5.87

$P(1,2) \quad \Delta = 4,5 u^2$

r Planos por P. cambia la pendiente m

$y-2 = m(x-1) \rightarrow y = mx + 2 - m$

pts corte ejes

$x \geq 0 \quad y = 2 - m \quad (0, 2 - m)$

$y = 0 \quad x = \frac{m-2}{m} \quad (\frac{m-2}{m}, 0)$

$\Delta = \frac{\frac{m-2}{m} (2-m)}{2} = 4,5 = \frac{9}{2}$

$m^2 + 5m + 4 = 0 \quad \left\{ \begin{array}{l} m = -4 \\ m = -1 \end{array} \right.$

rectas $m = -4 \quad y = -4x + 6$

$m = -1 \quad y = -x + 3$

