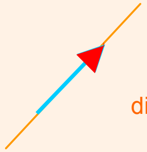
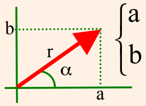
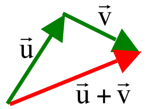
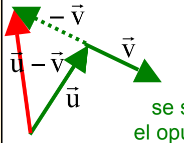
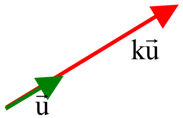
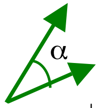
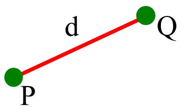
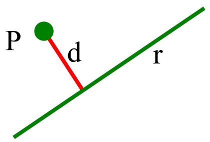
GEOMETRÍA ANALÍTICA DEL PLANO

Vectores, distancias y ángulos

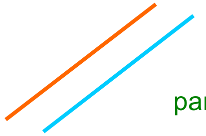
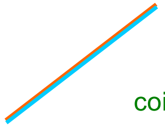
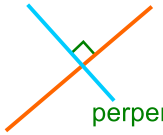
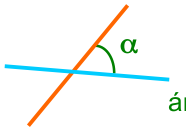
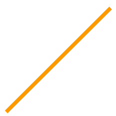
VECTORES

Vector	 módulo dirección sentido	$\begin{cases} r=\sqrt{a^2+b^2} \\ \operatorname{tg}\alpha=\frac{b}{a}\end{cases}$  $\begin{cases} a=r\cos\alpha \\ b=r\,\operatorname{sen}\alpha\end{cases}$
Suma		$\left.\begin{matrix}\vec{u}\ (a,b)\\ \vec{v}\ (a',b')\end{matrix}\right\}\Rightarrow \vec{u}+\vec{v}=(a+a',b+b')$
Diferencia	 se suma el opuesto	$\left.\begin{matrix}\vec{u}\ (a,b)\\ \vec{v}\ (a',b')\end{matrix}\right\}\Rightarrow \vec{u}-\vec{v}=(a-a',b-b')$
Producto por un número		$\left.\begin{matrix}\vec{u}\ (a,b)\\ k\in\Re\end{matrix}\right\}\Rightarrow k\vec{u}=(ka,kb)$
Producto escalar	 $\vec{u}\cdot\vec{v}=\lvert\vec{u}\rvert\lvert\vec{v}\rvert\cos\alpha$	$\left.\begin{matrix}\vec{u}\ (a,b)\\ \vec{v}\ (a',b')\end{matrix}\right\}\Rightarrow \vec{u}\cdot\vec{v}=aa'+bb'\in\Re$

DISTANCIAS

punto–punto		$\left.\begin{matrix}P\ (x_1,y_1)\\ Q\ (x_2,y_2)\end{matrix}\right\}\Rightarrow d(P,Q)=\lvert\overrightarrow{PQ}\rvert=\sqrt{(x_2-x_1)^2+(y_2-y_1)^2}$
Punto–recta		$\left.\begin{matrix}P\ (x_0,y_0)\\ r\equiv Ax+By+C=0\end{matrix}\right\}\Rightarrow d(P,r)=\frac{\lvert Ax_0+By_0+C\rvert}{\sqrt{A^2+B^2}}$

ÁNGULOS

Rectas	**Pendientes:** m, m'	**Vectores:** $\vec{u}\ (a,b)$, $\vec{v}\ (a',b')$	**Ecuaciones:** $\begin{cases}Ax+By+C=0\\ A'x+B'y+C'=0\end{cases}$
 paralelas	$m=m'$ pendientes iguales	$\vec{v}=k\cdot\vec{u}$ $(a',b')=k(a,b)$ vectores proporcionales	$\frac{A}{A'}=\frac{B}{B'}$ coeficientes proporcionales
 coincidentes	$m=m'$ pendientes iguales y un punto común	$(a',b')=k(a,b)$ vectores proporcionales y un punto común	$\frac{A}{A'}=\frac{B}{B'}=\frac{C}{C'}$ coeficientes proporcionales
 perpendiculares	$m=-\frac{1}{m'}$	$\vec{u}\cdot\vec{v}=0$ $a\cdot a'+b\cdot b'=0$ vectores perpendiculares	$A\cdot A'+B\cdot B'=0$
 ángulo α	$\operatorname{tg}\alpha=\frac{m-m'}{1+m\cdot m'}$	$\cos\alpha=\frac{\vec{u}\cdot\vec{v}}{\lvert\vec{u}\rvert\cdot\lvert\vec{v}\rvert}$	$\cos\alpha=\frac{A\cdot A'+B\cdot B'}{\sqrt{A^2+B^2}\sqrt{A'^2+B'^2}}$
recta horizontal	$m=0$ $\alpha=0^{\circ}$	$(a,0)$	$y=n$
recta vertical	$m=\infty$ $\alpha=90^{\circ}$	$(0,b)$	$x=k$
 diagonal	$m=1$ $\alpha=45^{\circ}$	$(1,1)$	$y=x+n$