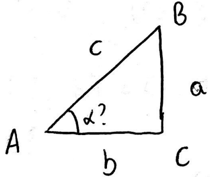
V.



$a = 5$

$b = 8$

¿ $\sin(A)$?

$\sin(A) = \dfrac{a}{c}$

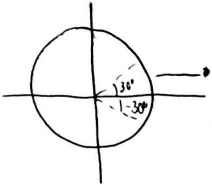
Teorema de Pitágoras por

$c = \sqrt{a^2 + b^2} = \sqrt{5^2 + 8^2} = \sqrt{89}$

$\sin(A) = \dfrac{5}{\sqrt{89}} = \dfrac{5\sqrt{89}}{89} = 0'52999 \simeq 0'53$

VIII ¿Es $\sin(-A) = -\sin(A)$?

Sí



$\text{sen}(30) = 1/2 \Rightarrow -\text{sen}(30) = -1/2$

$\text{sen}(-30) = -1/2 \Rightarrow \text{sen}(-30) = -\text{sen}(30)$

(IX) $p \equiv (3,5,2)$ $q \equiv (1,4,9)$. Calcular:

- $R = p - q$

$R = (3,5,2) - (1,4,9) = (2,1,-7)$

- $S = q - p$

$S = (1,4,9) - (3,5,2) = (-2,-1,7)$

- $|R|$

$|R| = \sqrt{2^2 + 1^2 + (-7)^2} = 3\sqrt{6} \approx 7,348$

- $\vec{R}$

$$\vec{R} = \frac{(2,1,-7)}{3\sqrt{6}} = \left(\frac{2}{3\sqrt{6}} x , \frac{1}{3\sqrt{6}} y , \frac{-7}{3\sqrt{6}} z \right)$$

(X). Calcular el valor de k sabiendo que el módulo de $V = (k,3) = 5$

$|V| = 5 = \sqrt{k^2 + 3^2}$

$k = \sqrt{5^2 + 3^2} = \sqrt{34} \simeq 5,830$

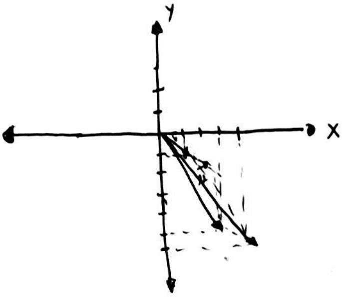
(XI) $V = (3,4)$ Hallar un vector unitario

$|V| = \sqrt{3^2 + 4^2} = 5$

$$\frac{V}{|V|} = \frac{(3,4)}{5} = \left(\frac{3}{5}, \frac{4}{5} \right)$$

XII $W = U + V \quad U = (3,-5) \quad V = (1,-1)$

$W = (3,-5) + (1,-1) = (4,-6)$



XIII Hallar k si el ángulo que forma $u = (3,k)$ con $V = (2,-1)$ vale

- $90°$
- $0°$
- $-45°$

- $90° \Rightarrow u \cdot V = |u|\,|V| \cos 90°$, con $\cos 90° \to 0$

$6 - k \cdot \quad = \quad 0$

$\boxed{k = 6}$

- $0° \quad u \cdot V = |U||V| \cos 0°$

$6 - k = \left(\sqrt{3^2 + k^2}\right) \cdot \sqrt{5}$

$6 - k = \sqrt{45 + 5k^2}$

$(6-k)^2 = 45 + 5k^2$

$36 - 12k + k^2 = 45 + 5k^2$

$4k^2 + 12k + 9 = 0 \quad \boxed{k = -1'5}$

Escaneado con CamScanner

$\cdot 45^\circ$

$u \cdot v = |u| \cdot |v| \cdot \cos 45^\circ$

$6 - k = \sqrt{45 + 5k^2} \cdot \frac{\sqrt{2}}{2}$

$6 - k = \frac{\sqrt{90 + 10k^2}}{2} \Rightarrow 12 - 2k = \sqrt{90 + 10k^2}$

$144 - 48k + 4k^2 = 90 + 10k^2$

$6k^2 + 48k - 54 = 0$

$k \begin{cases} -9 = k_1 \\ 1 = k_2 \end{cases}$

Escaneado con CamScanner

XIV $u = (2, k)$ $v = (3, -2)$ calcula k para:

· Vectores perpendiculares $\alpha = 90^\circ$

$$u \cdot v = |u| \cdot |v| \cos\alpha \xrightarrow{} 0$$

$$6 - 2k = 0$$

$$\boxed{k = 3}$$

· Vectores paralelos $\alpha = 0^\circ$

$$\frac{k}{-2} = \frac{2}{3} \Rightarrow \boxed{k = \frac{-4}{3}}$$

· Ángulo de 60° $\alpha = 60^\circ$

$$6 - 2k = \sqrt{2^2 + k^2} \cdot \sqrt{3^2 + (-2)^2} \cos 60^\circ$$

$$6 - 2k = \sqrt{4 + k^2} \cdot \sqrt{13} \cos 60^\circ$$

$$6 - 2k = \sqrt{52 + 13k^2} \cos 60^\circ$$

$$(12 - 4k)^2 = 52 + 13k^2$$

$$144 - 96k - 16k^2 = 52 + 13k^2$$

$$29k^2 + 96k - 92 = 0$$

$$\boxed{\begin{array}{l} k_1 = -4'086 \\ k_2 = 0'776 \end{array}}$$

(XV) Halla el ángulo que forman $u=(1,1,-1)$, $V=(2,2,21)$

$$\cos\alpha = \frac{\vec{u} \cdot \vec{v}}{|\vec{u}| \cdot |\vec{v}|}$$

$$\alpha = \arccos\left(\frac{\vec{u} \cdot \vec{v}}{|\vec{u}| \, |\vec{v}|}\right) = \arccos\left(\frac{2+2-21}{\sqrt{3} \cdot \sqrt{449}}\right) = \underline{117{,}59^\circ}$$