Problemas sobre vectores

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problema 1

$Ay = A\sin\theta = 7{,}3sen250 = -6{,}85$

$Ax = A\cos\theta = 7{,}3\cos 250 = -2{,}49$

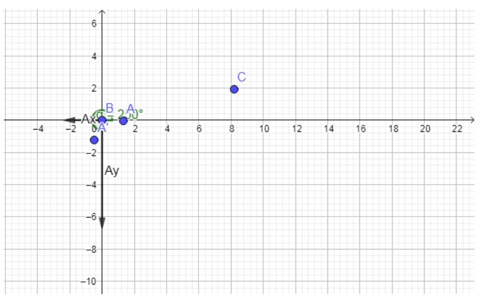

Figura 1. con expresión algebraica que conlleva cada función se conocen los valores Ax y Ay en el plano.

problema 2

$\vec{A} = \sqrt{ax^2 + ay^2} = \sqrt{(-25)^2 + (40)^2} = \sqrt{625 + 1600}$

$\sqrt{2225} = 47.16$

$\tan\theta = \frac{Ay}{Ax} = \theta = \tan^{-1}\left(\frac{40}{-25}\right) = -57.99$

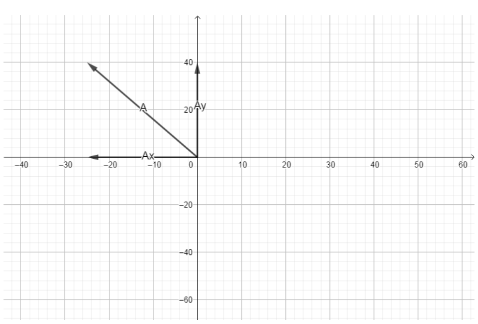

Figura 2. Se muestran las expresiones de Ax y Ay para de esta forma tener nuestro vector.

Problema 3

$\vec{A} = 4i - 3j + k => 4,\ Ay = -3\ Az = 1$

$\vec{V} = -i + 1j + 4k => Bx = -1, By = 1$

$\vec{A.B} = (4)(-1) + (-3)(1) + (1)(4)$

$= -4 - 3 + 4 = -3$

$\cos\theta = \frac{\vec{A.B}}{|\vec{A}||\vec{B}|} = \frac{-3}{(\sqrt{26})(\sqrt{18})} = \frac{-3}{\sqrt{468}} = \cos\theta^{-1}\left(\frac{-3}{\sqrt{468}}\right) = \theta = 97{,}97$

$\left|\vec{A}\right| = \sqrt{Ax + Ay^2 + Az^2}\ \ \left|\vec{A}\right|\sqrt{(4)^2 + (-3)^2 + (1)^2} = \sqrt{16 + 9 + 1} = \sqrt{26} = 5{,}09$

$\left|\vec{B}\right| = \sqrt{Bx^2 + By^2 + Bz^2} = \left|\vec{B}\right|\sqrt{(-1)^2 + (1)^2 + (4)^2} = \sqrt{1 + 1 + 16}\ \ \sqrt{18} = 4{,}24$

$\vec{Ax\vec{B}} = i\left[(-3)(4) - (1)(1)\right] - j\left[(4)(4) - (1)(-1)\right] + k\left[(4)(1) - (-3)(-1)\right] =$

$i\left[12 - 1\right] - j\left[16 + 1\right] + k\left[4 - 3\right] =$

$11i - 17j + k$

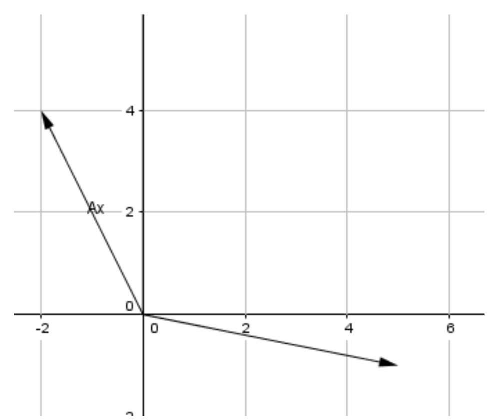

Figura 3. se conoce la direccion de A vector y B vector con los valores obtenidos