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**Nombre del trabajo: Ejercicios con vectores**

**Materia: Calculo vectorial**

**Grado: Tercer cuatrimestre**

**Grupo: ISC13SDC0119-F**

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Construir vector

$$\vec{AB} = B - A$$

$$\vec{AB} = B(-3, -4) - A(8, 2)$$

$$\vec{AB} = (-3-8) \quad (-4-2)$$

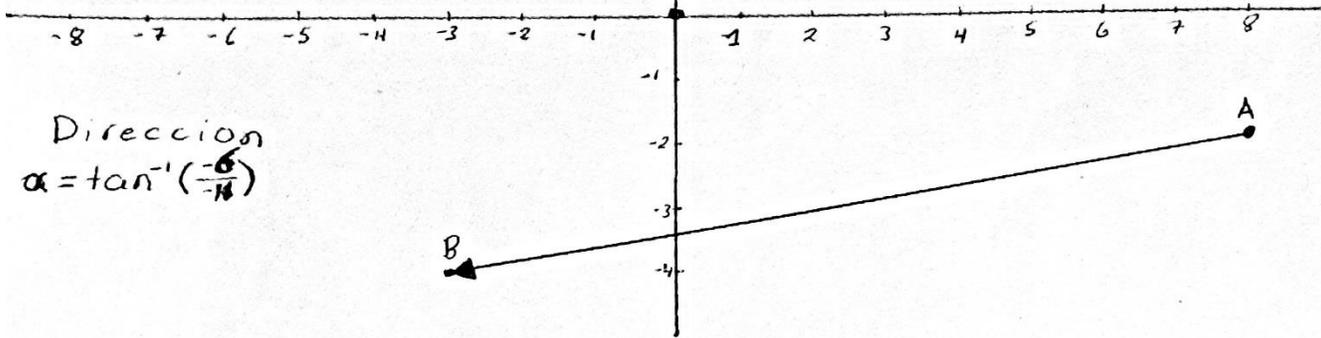
$$\vec{AB} = \underline{\underline{(-11, -6)}}$$

Magnitud de un vector

$$|A| = \sqrt{x^2 + y^2}$$

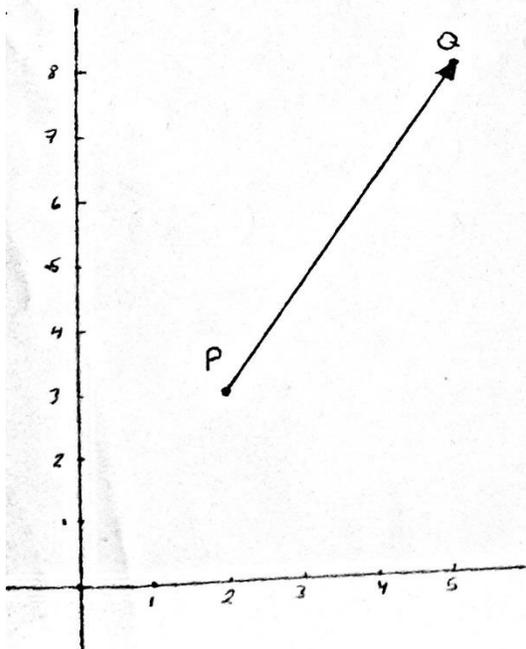
$$|AB| = \sqrt{(-11)^2 + (-6)^2}$$

$$|AB| = \sqrt{157} = 12.5$$



Dirección

$$\alpha = \tan^{-1}\left(\frac{-6}{-11}\right)$$



Construir vector

$$\vec{PQ} = Q - P$$

$$\vec{PQ} = Q(5, 8) - P(2, 3)$$

$$\vec{PQ} = (5-2) \quad (8-3)$$

$$\vec{PQ} = (3, 5)$$

Magnitud de un vector

$$|P| = \sqrt{x^2 + y^2}$$

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

$$|PQ| = \sqrt{9 + 25}$$

$$|PQ| = \sqrt{34} = 5.833$$

Dirección de un vector

$$\alpha = \tan^{-1}\left(\frac{y}{x}\right)$$

$$\alpha = \tan^{-1}\left(\frac{5}{3}\right)$$



# Operaciones combinadas con vectores

Vectores:  $\vec{a} = (1, -3)$ ,  $\vec{b} = (-\frac{1}{3}, \frac{2}{3})$  y  $(-2, 3)$

Calcular:  $2\vec{a} - \vec{c} + 3\vec{b}$

$$2(1, -3) - (-\frac{1}{3}, \frac{2}{3}) + 3(-2, 3)$$

$$(2, 6) - (-\frac{1}{3}, \frac{2}{3}) + (-6, 9)$$

$$(2 - (-\frac{1}{3}) + (-6); 6 - \frac{2}{3} + 9) = \underline{\underline{(-\frac{11}{3}, \frac{43}{3})}} \quad \text{///}$$

Vector:  $\vec{w} = (-3, 2)$  Numeros:  $a=2$ ,  $b=-3$

Calcular:  $a \cdot b \cdot \vec{w}$

$$2 \cdot 3 \cdot (-3, 2)$$

$$2 \cdot (-9, 6)$$

$$\underline{\underline{(-18, 12)}} \quad \text{///}$$

Vectores:  $\vec{a} = (2, 2)$ ,  $\vec{b} = (-1, 2)$  y  $\vec{c} = (-1, -3)$

Calcular:  $2\vec{b} + 3(\vec{a} + \vec{c}) + 2\vec{a}$

$$2(-1, 2) + 3[(2, 2) + (-1, -3)] + 2(2, 2)$$

$$2(-1, 2) + 3(1, -1) + 2(2, 2)$$

$$(-2, 4) + (3, -3) + (4, 4)$$

$$(-2 + 3 + 4; 4 + (-3) + 4)$$

$$\underline{\underline{(5; 5)}} \quad \text{///}$$