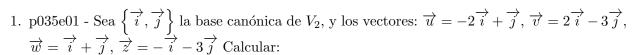


## Departamento de Matemáticas 1º Bachillerato



22 - Producto Escalar



(a) Las coordenadas de cada uno de ellos respecto de la base canónica. Las coordenadas de los vectores:  $\overrightarrow{u} + 2\overrightarrow{v}$ ,  $5\overrightarrow{u} - \overrightarrow{w}$ ,  $-3\overrightarrow{v} + 4\overrightarrow{w}$ ,  $\overrightarrow{w} - 2\overrightarrow{z}$ 

**Sol:** [[(-2,1),(2,-3),(1,1),(-1,-3)],[(2,-5),(4,-11),(13,-2),(3,7)]]

- 2. p035e02 Estudia la dependencia lineal de los siguientes conjuntos de vectores:
  - (a)  $\vec{u} = (4, 12) \ \vec{v} = (2, 6)$

Sol: True

Sol: False

(c)  $\overrightarrow{u} = (1,1)$   $\overrightarrow{v} = (-2,-3)$ 

(b)  $\vec{u} = (1,2) \ \vec{v} = (3,4)$ 

Sol: False

- 3. p036e09 Respecto de una base ortonormal tenemos dos vectores  $\overrightarrow{u}$  y  $\overrightarrow{v}$ . Calcular  $\overrightarrow{u} \cdot \overrightarrow{v}$ ,  $|\overrightarrow{u}| y |\overrightarrow{v}| y \angle (\overrightarrow{u}, \overrightarrow{v})$  siendo:
  - (a)  $\vec{u} = (2, -3) \ \vec{v} = (5, 4)$

(d)  $\vec{u} = (2, -3) \ \vec{v} = (5, 4)$ 

**Sol:**  $\begin{bmatrix} -2, & \sqrt{13}, & \sqrt{41} \end{bmatrix}$ , 94,9697407281103 **Sol:**  $\begin{bmatrix} -2, & \sqrt{13}, & \sqrt{41} \end{bmatrix}$ , 94,9697407281103

(b)  $\vec{u} = (1,2) \ \vec{v} = (3,4)$ 

(e)  $\vec{u} = (1,2) \ \vec{v} = (3,4)$ 

**Sol:**  $[11, [\sqrt{5}, 5], 10,304846468766]$ 

**Sol:**  $[11, [\sqrt{5}, 5], 10,304846468766]$ 

(c)  $\overrightarrow{u} = (1,1) \ \overrightarrow{v} = (-2,-3)$ 

(f)  $\overrightarrow{u} = (1,1) \ \overrightarrow{v} = (-2,-3)$ 

**Sol:**  $[-5, [\sqrt{2}, \sqrt{13}], 168,69006752598]$  **Sol:**  $[-5, [\sqrt{2}, \sqrt{13}], 168,69006752598]$ 

- 4. p036e12 Calcula x, de modo que el producto escalar de  $\overrightarrow{u}$  y  $\overrightarrow{v}$  sea igual a 7, siendo:
  - (a)  $\vec{u} = (3, -5) \ \vec{v} = (x, 2)$

(b)  $\vec{u} = (3,1) \ \vec{v} = (2,x)$ 

**Sol:**  $\left[\frac{17}{3}\right]$ 

**Sol:** [1]

5. p<br/>036e13 - Dado el vector  $\overrightarrow{u}$ , calcula x de modo que sea ortogonal a  $\overrightarrow{v}$  siendo:

(a) 
$$\vec{u} = (-5, x) \ \vec{v} = (4, -2)$$

**Sol:** 
$$[-10]$$

(b) 
$$\overrightarrow{u} = (2, x) \overrightarrow{v} = (3, 1)$$

**Sol:** 
$$[-6]$$

(c) 
$$\overrightarrow{u} = (3, x) \overrightarrow{v} = (5, 2)$$

**Sol:** 
$$\left\{ \frac{120}{13} + \frac{87\sqrt{3}}{13}, -\frac{87\sqrt{3}}{13} + \frac{120}{13} \right\}$$

(d) 
$$\overrightarrow{u} = (2, x) \overrightarrow{v} = (3, 1)$$

**Sol:** 
$$\left\{4 + \frac{10\sqrt{3}}{3}, -\frac{10\sqrt{3}}{3} + 4\right\}$$

(e) 
$$\overrightarrow{u} = (1,0) \overrightarrow{v} = (1,x)$$

**Sol:** 
$$\{-\sqrt{3}, \sqrt{3}\}$$

6. p<br/>036e13b - Dado el vector  $\overrightarrow{u}$ , calcula x de modo que  $|\overrightarrow{u}| = \sqrt{34}$  siendo:

(a) 
$$\overrightarrow{u} = (-5, x)$$

(b) 
$$\overrightarrow{u} = (2, x)$$

**Sol:** 
$$[-\sqrt{30}, \sqrt{30}]$$

7. p036e14 - Respecto de una base ortonormal tenemos dos vectores  $\overrightarrow{u}$  y  $\overrightarrow{v}$ . Calcular  $\overrightarrow{u} \cdot \overrightarrow{v}$ ,  $|\overrightarrow{u}| y |\overrightarrow{v}|$  y  $\angle(\overrightarrow{u}, \overrightarrow{v})$  siendo:

(a) 
$$\overrightarrow{u} = (3, 2) \overrightarrow{v} = (1, -5)$$

(b) 
$$\vec{u} = (1, 6) \ \vec{v} = (-0.5, -3)$$

Sol: 
$$\left[-7, \quad \left[\sqrt{13}, \quad \sqrt{26}\right], \quad 112,38013505196\right]$$
 Sol:  $\left[-\frac{37}{2}, \quad \left[\sqrt{37}, \quad \frac{\sqrt{37}}{2}\right], \quad 180,0\right]$