1. p035e01 - Sea $\left\{\overrightarrow{i}, \overrightarrow{j}\right\}$ la base canónica de V_2, y los vectores: $\overrightarrow{u} = -2\overrightarrow{i} + \overrightarrow{j}$, $\overrightarrow{v} = 2\overrightarrow{i} - 3\overrightarrow{j}$, $\overrightarrow{w} = \overrightarrow{i} + \overrightarrow{j}$, $\overrightarrow{z} = -\overrightarrow{i} - 3\overrightarrow{j}$ Calcular:

   (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) $\overrightarrow{u} = (4,12)$ $\overrightarrow{v} = (2,6)$

   Sol: $True$

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

   Sol: $False$

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

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

   Sol: $\left[-2, \quad \left[\sqrt{13}, \quad \sqrt{41}\right], \quad 94{,}9697407281103\right]$

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

   Sol: $\left[11, \quad \left[\sqrt{5}, \quad 5\right], \quad 10{,}304846468766\right]$

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

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

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

   Sol: $\left[-2, \quad \left[\sqrt{13}, \quad \sqrt{41}\right], \quad 94{,}9697407281103\right]$

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

   Sol: $\left[11, \quad \left[\sqrt{5}, \quad 5\right], \quad 10{,}304846468766\right]$

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

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

4. p036e12 - Calcula x, de modo que el producto escalar de $\overrightarrow{u}$ y $\overrightarrow{v}$ sea igual a 7, siendo:

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

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

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

   Sol: $[1]$

5. p036e13 - Dado el vector $\overrightarrow{u}$, calcula x de modo que sea ortogonal a $\overrightarrow{v}$ siendo:

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

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. p036e13b - Dado el vector $\overrightarrow{u}$, calcula x de modo que $|\overrightarrow{u}| = \sqrt{34}$ siendo:

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

Sol: $[-3, \quad 3]$

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

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

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

Sol: $\left[-7, \quad \left[\sqrt{13}, \quad \sqrt{26}\right], \quad 112{,}38013505196\right]$

(b) $\overrightarrow{u} = (1, \quad 6)$ $\overrightarrow{v} = (-0{,}5, \quad -3)$

Sol: $\left[-\frac{37}{2}, \quad \left[\sqrt{37}, \quad \frac{\sqrt{37}}{2}\right], \quad 180{,}0\right]$