



Soluciones del Boletín V:
ESPACIO VECTORIAL EUCLIDEO

1. $G = \begin{pmatrix} 6 & 6 & 1 \\ 6 & 11 & -5 \\ 1 & -5 & 9 \end{pmatrix}$

2. Al producto escalar usual : $|(2, 1)| = \sqrt{5}$.

Al producto escalar dado: $|(2, 1)| = \sqrt{10}$.

3. $\frac{\pi}{3}$

4.

5. a) Es un producto escalar sobre R^3 .

b) $\vec{v}_1 = (1, 0, 0)$, $\vec{v}_2 = (-1, 1, 0)$, $\vec{v}_3 = (0, \frac{1}{2}, \frac{1}{2})$

6. Fácil de demostrar.

7.

8. a) $G = \begin{pmatrix} 1 & 0 & 0 \\ 0 & 1 & 1 \\ 0 & 1 & 2 \end{pmatrix}$

b) $B' = (\vec{u}_1, \vec{u}_2, \vec{u}_3)$ con $\vec{u}_1 = \vec{v}_1$, $\vec{u}_2 = \vec{v}_2$ y $\vec{u}_3 = \vec{v}_3 - \vec{v}_2$.

9. $\{(\frac{1}{\sqrt{3}}, \frac{1}{\sqrt{3}}, \frac{1}{\sqrt{3}}), (\frac{1}{\sqrt{6}}, \frac{-2}{\sqrt{6}}, \frac{1}{\sqrt{6}}), (\frac{-1}{\sqrt{2}}, 0, \frac{1}{\sqrt{2}})\}$

10.

11. a) $\alpha > 0$

b) $\{y = (a, b, c) : 5a + 2b + 4c = 0\}$

12. a) $\{\frac{1}{\sqrt{3}}(1, 1, 1), \sqrt{\frac{3}{2}}(\frac{1}{3}, \frac{1}{3}, \frac{2}{3}), \sqrt{\frac{6}{11}}(\frac{-7}{6}, \frac{-1}{6}, \frac{-2}{3})\}$.

b)

13. $\alpha > 0$, $\{(\frac{1}{\sqrt{5}}(1, 0, 0), \sqrt{\frac{5}{6}}(\frac{2}{5}, 1, 0), \sqrt{\frac{6}{7}}(\frac{-1}{3}, \frac{1}{6}, 1))\}$