

Linear Algebra II - Worksheet 6

In \mathbb{R}^3 , we consider the plane V of equation $x_1 + x_2 - x_3 = 0$.

1. Compute V^\perp .
2. Find an orthonormal basis \mathcal{B}_V of V .
3. Complete \mathcal{B}_V into an orthonormal basis \mathcal{B} of \mathbb{R}^3 .
4. Prove that there is a rotation T around the axis V^\perp and angle $\pi/3$ such that

$$T \begin{bmatrix} 1 \\ 0 \\ 1 \end{bmatrix} = \begin{bmatrix} 0 \\ 1 \\ 1 \end{bmatrix}.$$

Compute $[T]_{\mathcal{B}}^{\mathcal{B}}$.

5. Compute $[T]$.