
Exercise 1 Find the coordinates of $\mathbf{v} = ax^2 + bx + c$ of $\mathbb{P}^2$ with respect to the ordered basis $\mathcal{B} = \{x^2, x + 1, x + 2\}$.

$$[\mathbf{v}]_{\mathcal{B}} = \begin{bmatrix} \dots \\ \dots \\ \dots \end{bmatrix}$$

Source

[Nicholson] W. Keith Nicholson, *Linear Algebra with Applications*, Lyryx 2021, Open Edition, Exercises 9.1.1 (b).