

## GVG'2021 Exercise-04 EN

1. Create companion matrix  $M_x$  for polynomial  $2x^3 - 6x^2 + 11x - 6$ .
2. Let us have a camera with projection matrix

$$P = \begin{bmatrix} 1 & 0 & 1 & 1 \\ 0 & 1 & 1 & 1 \\ 0 & 0 & 1 & 1 \end{bmatrix}$$

write the cosine of the angle between rays passing through image points  $[0, 0]^T$  a  $[1, 1]^T$ ?

3. Find a basis  $\alpha = (\vec{a}_1, \vec{a}_2, \vec{a}_3)$  such that vector  $\vec{x}$ , which is obtained as  $\vec{u} = 2\vec{b}_1 + 3\vec{b}_2$  as shown in the following figure, would have coordinates in  $\alpha$  equal to  $[2, 3, 2]^T$ . Write down the coordinates of the vectors of  $\alpha$  in basis  $\beta = (\vec{b}_1, \vec{b}_2, \vec{b}_3)$ .

