Homework 6 - Math 2568 (Autumn 2020)

Prof. Cueto

Due date: Friday October 16, 2020 (on Carmen).

The sections and problem numbers refer to the course's textbook (L.W. Johnson, R.D. Riess, J.T. Arnold: *Introduction to Linear Algebra*, 5th edition, Pearson.)

Section	Assigned Problems	Problems to be turned in
§3.5	1, 3, 6, 13, 15, 20, 22, 26, 29, 31, 35	6, 13, 20, 26, 35
§3.6	1, 5, 7, 9, 11, 13, 17, 19	1, 5, 11, 13, 19
§3.7	1, 2, 3, 4, 5, 7, 8, 10, 15, 18, 19, 20, 21, 23, 25, 29, 36, 37, 41, 42	2, 4, 7, 18, 19, 21, 23, 37, 41, 42

Bonus Problem: Consider the following three vectors in $\mathbb{R}^4$:

$$\mathbf{u} = \begin{bmatrix} -1 \\ 0 \\ 1 \\ 2 \end{bmatrix}, \qquad \mathbf{v} = \begin{bmatrix} 3 \\ 4 \\ -2 \\ 5 \end{bmatrix} \qquad \text{and} \qquad \mathbf{w} = \begin{bmatrix} 1 \\ 4 \\ 0 \\ 9 \end{bmatrix}.$$

Can you find a system of homogeneous linear equations with solution space exactly equal to the subspace of $\mathbb{R}^4$ spanned by the three vectors. What happens if we want a system where $\mathbf{u}$ is a solution, but not the other two?