

Quiz 5

MA 262
Artur's Class

2014/09/25

Problem 1

Set

$$\mathbf{A} = \begin{pmatrix} a & b \\ c & d \end{pmatrix}, \quad \mathbf{B} = \mathbf{A} - x\mathbf{I}_2,$$

where a, b, c, d are constants and x is a variable.

- Compute $\det(\mathbf{B})$. Your answer should be a polynomial in x .
- What is the constant term of the polynomial—does it look like something familiar?

Problem 2

Is it possible for two planes in 3-dimensional space (\mathbb{R}^3) to have no intersection? If so what can you say about the geometry?

Problem 3

Given the following system

$$\begin{pmatrix} 1 & 2 \\ 2 & 4 \end{pmatrix} \begin{pmatrix} x_1 \\ x_2 \end{pmatrix} = \begin{pmatrix} 1 \\ 2 \end{pmatrix},$$

compute the solution set. Use free parameters and vector notation!