



LPR Cup 2023

10.s04.e05

Hint 2

1. We added timecodes to the video about math.
2. (0 points) Find four different complex numbers, the absolute value of which is equal to one.
3. (0 points) The matrix

$$R = \begin{pmatrix} 0,995185 & -0,0980171 \\ 0,0980171 & 0,995185 \end{pmatrix}$$

rotates a vector by $\pi/32$ in the counterclockwise direction. How many times should you act with it in order to get the vector $\begin{pmatrix} 0 \\ 1 \end{pmatrix}$ from the vector $\begin{pmatrix} 1 \\ 0 \end{pmatrix}$?

4. We recorded an example of solution for several points, in which we don't write a single line of code.
5. (0 points) A ball of mass m moves with velocity v_0 at 45° to the wall and collides with it inelastically. The time, for which the collision lasts is τ . Find the average force acting on the wall and its direction.
6. (0 points) Let the light normally fall on a flat surface. The radiation power per unit area is equal to I . What is the direction of the force that acts on the surface?