

2007/2008 Graphics Tutorial 4

Problem 1 Give the matrix for reflection in the line $2x - y = 0$ in \mathbb{R}^2 .

Problem 2 Give the matrix for rotation around the origin with angle $\theta = 2\pi/3$.

Problem 3 Give the matrix for scaling with a factor 3 in both x and y direction, where the center of scaling is the origin.

Problem 4 Give the matrix for reflection in the line $2x - y + 3 = 0$ in \mathbb{R}^2 .

Problem 5 Give the matrix for rotation around the point $(2, 3)$ with angle $\theta = 2\pi/3$.

Problem 6 Give the matrix for scaling with a factor 3 in both x and y direction, where the center of scaling is the point $(-1, -2)$.

Problem 7 Give the matrix for reflection in the plane through the points $(1, 0, 0)$, $(0, 1, 0)$ and $(2, -1, 3)$ in \mathbb{R}^3 .

Problem 8 For each of the problems above, check your answer by giving an expression for the points that are mapped onto themselves, and applying the found matrix to these points.