

FROM SYMMETRY TO GROUPS, HOMEWORK 2

Problem 1. Let $\vec{v} = \begin{bmatrix} a \\ b \end{bmatrix}$, $\vec{w} = \begin{bmatrix} c \\ d \end{bmatrix}$ be two vectors. Prove that \vec{v} and \vec{w} are perpendicular if and only if $ac + bd = 0$.

Problem 2. Write the explicit matrix which corresponds to the reflection through the line $y = ax$.