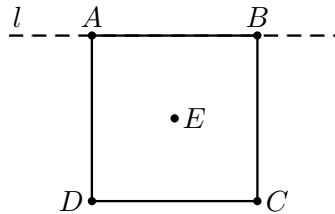


Wallpaper and Tiles

45. Suppose that $ABCD$ is a square with centre E and l is the line defined by A and B . Show that

$$\rho_{A,\pi}, \rho_{B,\pi}, \rho_{C,\pi} \in \langle \sigma_l, \rho_{D,\pi}, \rho_{E,\pi} \rangle,$$

that is, show that $\rho_{A,\pi}$ can be written as a product of the transformations on the right hand side.



(Hint: Show that if α is an isometry then $\alpha\sigma_k\alpha^{-1} = \sigma_{\alpha(k)}$ and $\alpha\rho_{P,\theta}\alpha^{-1} = \rho_{\alpha(P),\theta}$.)