

Algebra I – autumn 2024 – Homework 7

Find a direct product of well-known groups that is isomorphic to the quotient group $(G, \cdot)/H$ where

$$G = \left\{ \begin{pmatrix} 1 & 0 & 0 \\ a & 1 & 0 \\ c & b & r \end{pmatrix} ; a, b \in \mathbb{Z}, r \in \{-1, 1\}, c \in \mathbb{Z}[i] \right\}, \quad H = \left\{ \begin{pmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ d + 2ei & 2f & 1 \end{pmatrix} ; d, e, f \in \mathbb{Z} \right\}.$$