Group theory

Quiz on group centers

Mark the squares that are followed by correct statements.

We denote by $Z(G)$ the center of a group $G$.

☐ 1. For any groups $G$ and $H$ there is an isomorphism

$$Z(G \times H) \cong Z(G) \times Z(H).$$

☐ 2. Any group of order 6 has trivial center.

☐ 3. $Z(G) = G$ if and only if $G$ is abelian.

☐ 4. Dihedral group $D_6$ of all symmetries of a regular hexagon has trivial center.

☐ 5. Any automorphism of a group $G$ takes the center of $G$ to itself.

☐ 6. $Z(Z(G)) = Z(G)$.

☐ 7. Dihedral group $D_5$ of all symmetries of a regular pentagon has trivial center.

☐ 8. There exists a group of order 24 whose center has order 12.

☐ 9. The center of the alternating group $A_4$ is trivial.

☐ 10. Any group $G$ is isomorphic to the center of some group $H$. 