

SUSBET PRODUCT – ANSWER

Definition: If H is a subgroup or subset of a group G , then HH is the set of all products h_1h_2 such that $h_1, h_2 \in H$.

Theorem: If H is a subgroup of a finite group G , then $HH = H$.

Proof: On the one hand, if $h_1, h_2 \in H$, then $h_1h_2 \in H$ since H is closed under multiplication. Hence, HH is a subset of H . But on the other hand, if $h \in H$, then $h = eh \in HH$ and, thus, H is a subset of HH . Therefore, if $HH \subseteq H$ and $H \subseteq HH$, then it follows that $HH = H$.

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