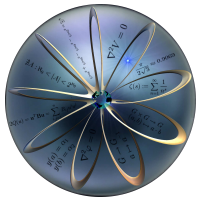

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external direct product of groups

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The *external direct product* $G \times H$ of two groups G and H is defined to be the set of ordered pairs (g, h), with $g \in G$ and $h \in H$. The group operation is defined by

$(g, h)(g', h') = (gg', hh')$

It can be shown that $G \times H$ obeys the group axioms. More generally, we can define the external direct product of n groups, in the obvious way. Let $G = G_1 \times \ldots \times G_n$ be the set of all ordered n-tuples $\{(g_1, g_2 \ldots, g_n) \mid g_i \in G_i\}$ and define the group operation by componentwise multiplication as before.