

1.22: Conjugacy class

If g_1 and g_2 are two elements of a group G , they are called **conjugate** if there exists an element g_3 in G such that:

$$g_3 g_1 g_3^{-1} = g_2.$$

Conjugacy is an equivalence relation and therefore partitions G into equivalence classes: every element of the group belongs to precisely one conjugacy class

The equivalence class that contains the element g_1 in G is

$$Cl(g_1) = \{ g_3 g_1 g_3^{-1} \mid g_3 \in G \}$$

and is called the **conjugacy class** of g_1 . The **class number** of G is the number of conjugacy classes.

The classes $Cl(g_1)$ and $Cl(g_2)$ are equal if and only if g_1 and g_2 are conjugate, and disjoint otherwise.

For Abelian groups the concept is trivial, since each element forms a class on its own.

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