MAT 347
Presentations
September 21, 2015

Presentations

A presentation of a group is a set S of generators along with relations $R_1, \ldots, R_m$, which are equations in the generators. The resulting group $G = \langle S | R_1, \ldots, R_m \rangle$ consists of words $xyz^{-1}xy^{-1}zz\ldots$ in the generators (where $S = \{x, y, z, \ldots\}$), except that two words are equal if we can simplify them using the relations.

1. For each of the following presentations, figure out how many elements are the resulting group and then try to recognize the group.
   (a) $\langle s, t | s^2 = t^2 = 1, sts = tst \rangle$
   (b) $\langle a, b | ba = ab^2, ab = ba^2 \rangle$
   (c) $\langle a, b | a^4 = 1, a^2 = b^2, b^{-1}ab = a^{-1} \rangle$
2. If a group is presented with only one generator, what can you say about the group?