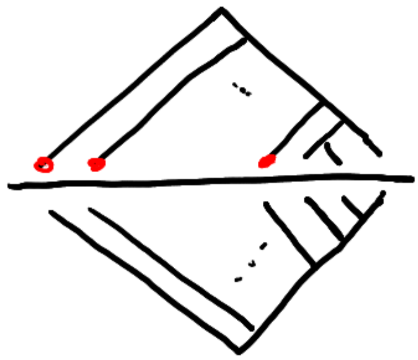
1. Show that F is generated by:

$x_0 :=$  and $x_1 =$ 

2. <u>Put</u>:

$x_n :=$ 

$n+3$ leaves

(see 6.*)

<u>Show</u>: $x_i^{-1} x_m x_i = x_{m+1}$ for $i < m$.

3. a) Show that for any $n \in \mathbb{N}$, F contains a free abelian subgroup of rank n.

b) Deduce that F cannot act freely on a contractible CW-complex of finite dimension.

4. Show that F has no torsion, is infinite and not abelian.

5.* Show that F does not contain a non-abelian free subgroup.

6.* Show that F has the presentation

$$F = \langle x_0, x_1, x_2, \ldots \mid x_m x_i = x_i x_{m+1} \text{ for } i < m \rangle$$

Find normal forms in this gen. set.

Deduce that F has triv. center & solvable word problem.

7. Let G be a group with trivial center and a simple commutator subgroup. Show that every proper quotient of G is abelian.

<u>Define</u>:

$$EA_0 := \{ G \mid G \text{ is abelian or finite} \}$$

For ordinal numbers $\alpha > 0$:

$$EA_\alpha := \left\{ G \;\middle|\; \begin{array}{l} G \text{ is an ascending union or an} \\ \text{extension of groups in } \bigcup_{\beta < \alpha} EA_\beta \end{array} \right\}$$

8. Show that each stratum EA_α is closed with respect to taking supgroups and quotients.

9. Show: for each m, the group F acts transitively on the set of $(1,m)$-diagrams

The quotients X_m / F are compact.