Inductive relationships

- Splitting: $rk_F(wv) \leq rk_F(w) + rk_F(v)$ for $w, v \in F_n$,

  - Band presentations can be concatenated.

- Conjugacy: $rk_F(vwv^{-1}) = rk_F(w)$

  - Conjugate each term in a band presentation.

Example

- $aba^{-1}c \in F_3$

- $rk_F(aba^{-1}c) \leq rk_F(aba^{-1}) + rk_F(c) \leq rk_F(b) + rk_F(c) = 2$

- But how should we apply them? $a \cdots b \cdots a^{-1} \cdots b^{-1}$

- Claim: rank is computed by applying these relationships optimally.