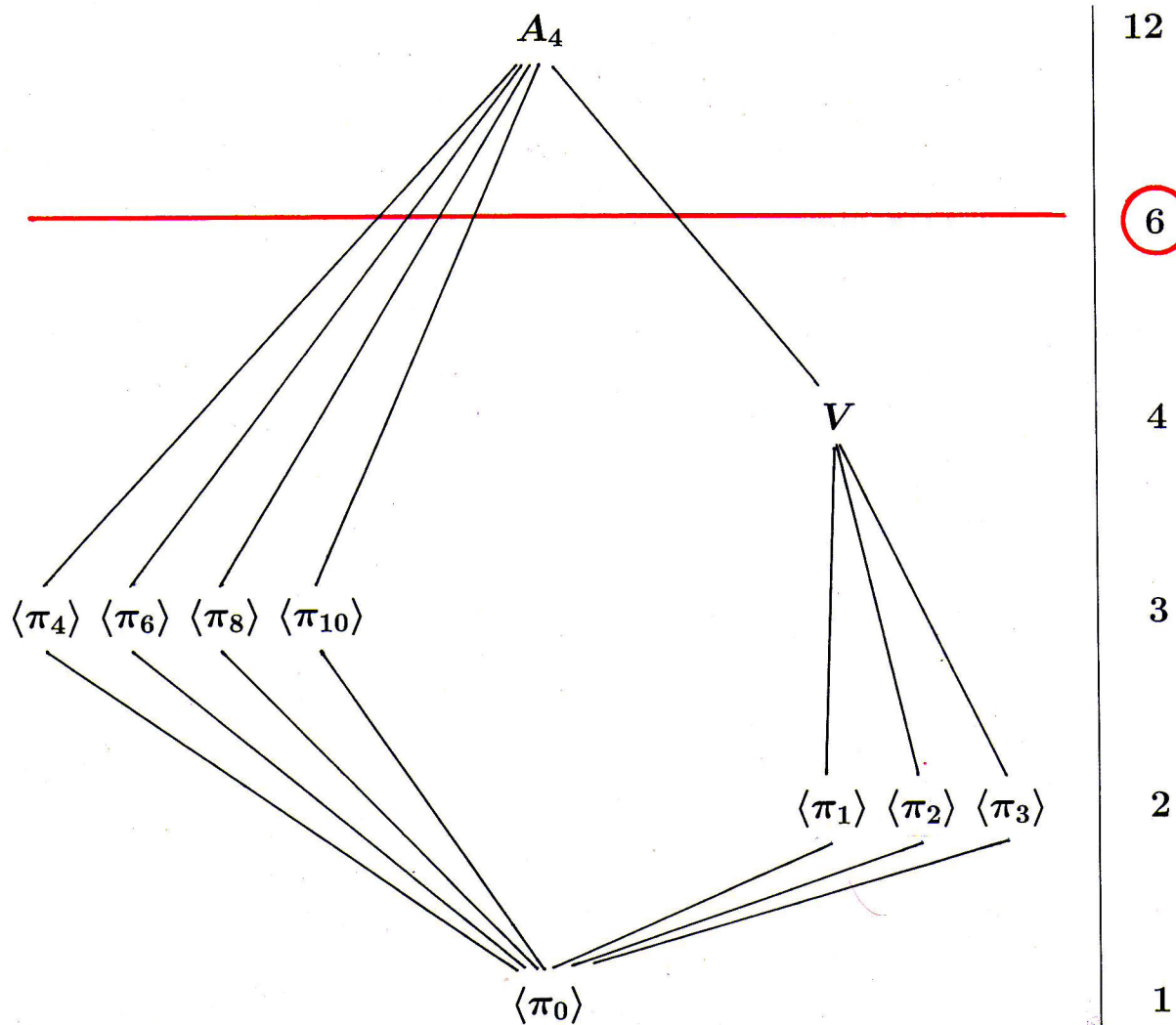


# Der Untergruppenverband von $(A_4, \circ)$



Elemente von  $A_4$ :  $\pi_0 = \varepsilon$  (neutrales Element)

$$\pi_1 = (1\ 2)(3\ 4), \pi_2 = (1\ 3)(2\ 4), \pi_3 = (1\ 4)(2\ 3),$$

$$\pi_4 = (1\ 2\ 3), \pi_5 = \pi_4^{-1}, \pi_6 = (1\ 2\ 4), \pi_7 = \pi_6^{-1},$$

$$\pi_8 = (1\ 3\ 4), \pi_9 = \pi_8^{-1}, \pi_{10} = (2\ 3\ 4), \pi_{11} = \pi_{10}^{-1}$$

$$V = \langle \{\pi_1, \pi_2\} \rangle = \{\pi_0, \pi_1, \pi_2, \pi_3\} \quad \text{Kleinsche Vierergruppe}$$