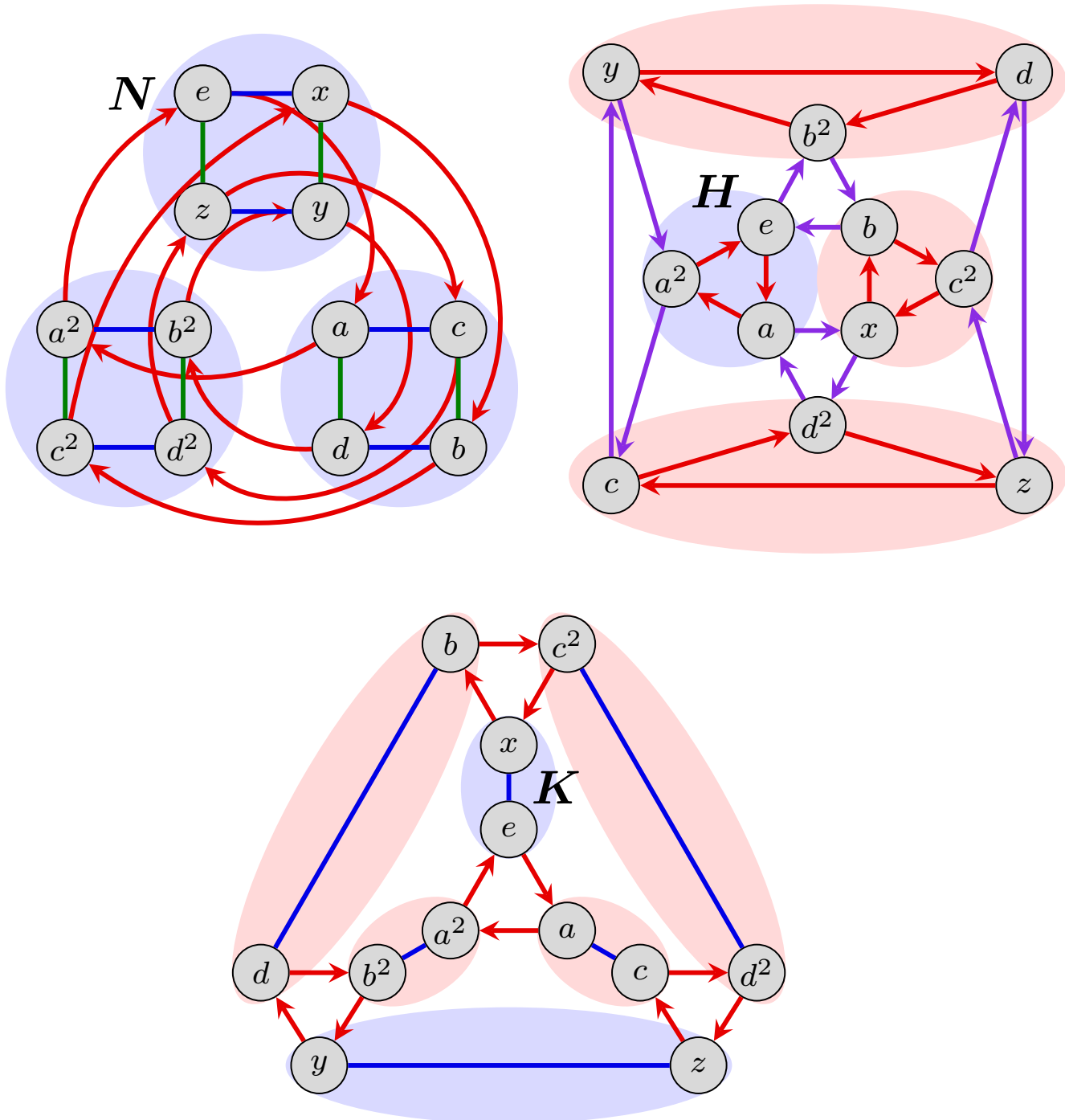
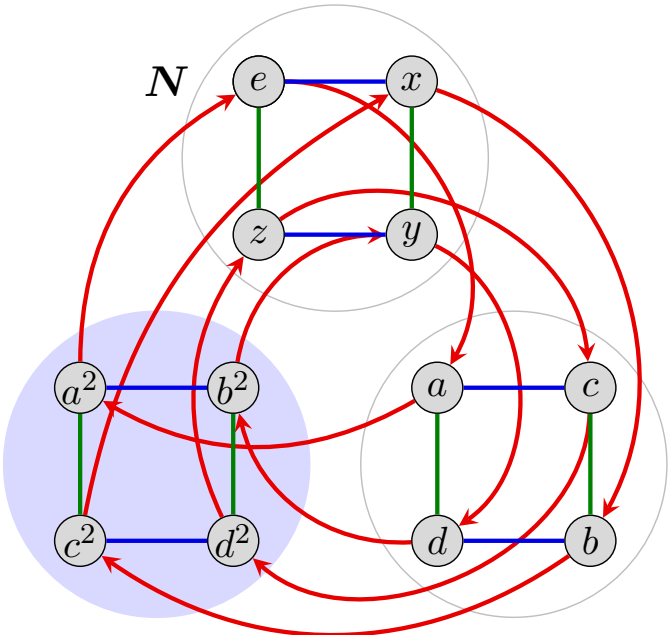
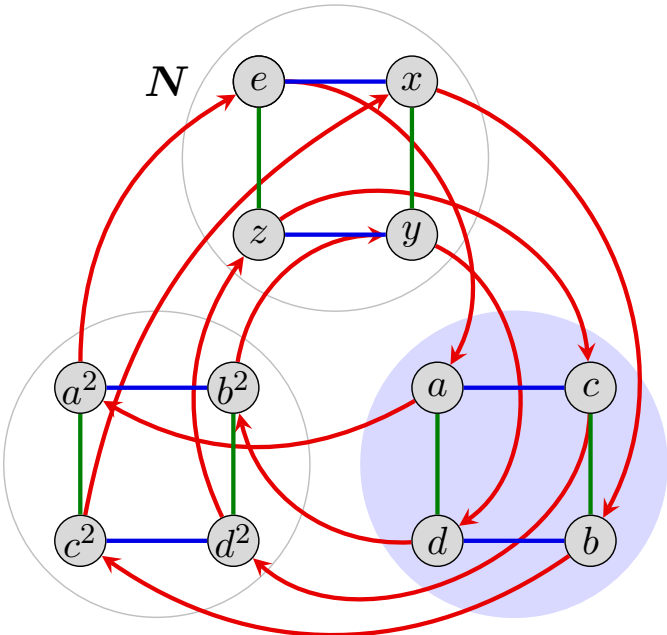
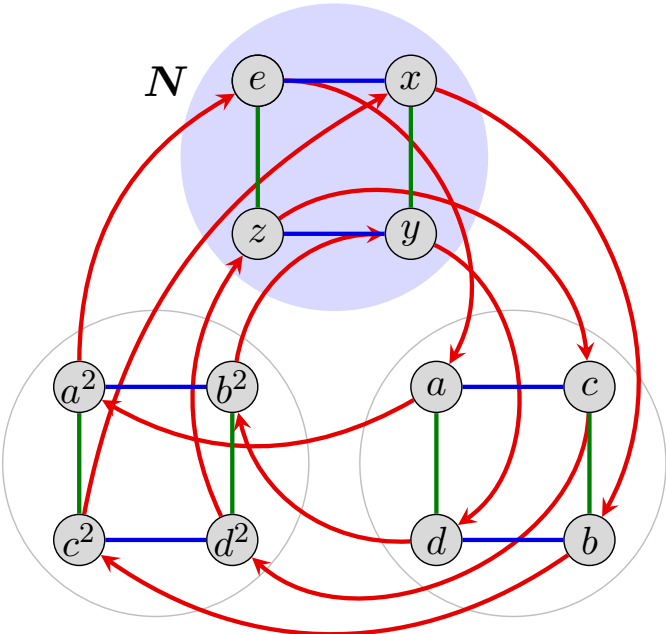


# Supplemental material for Visual Algebra (Math 4120), HW 6

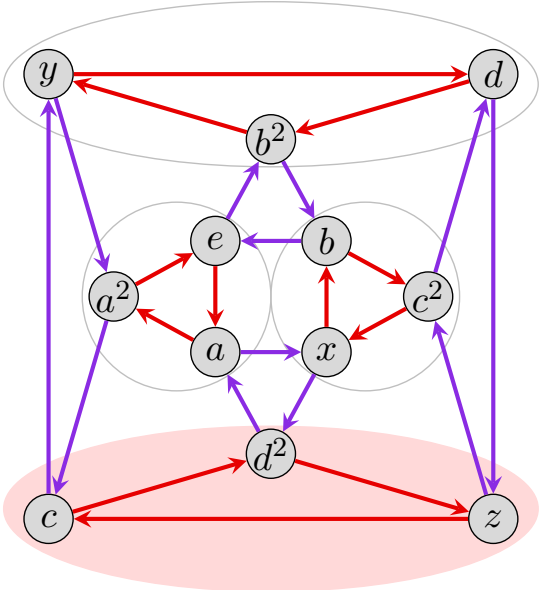
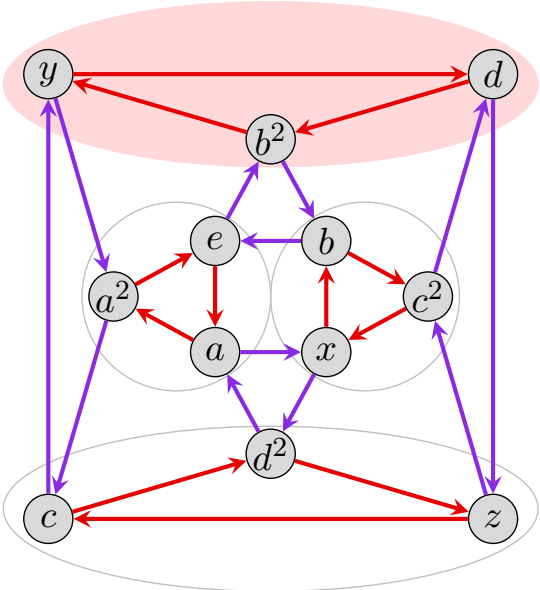
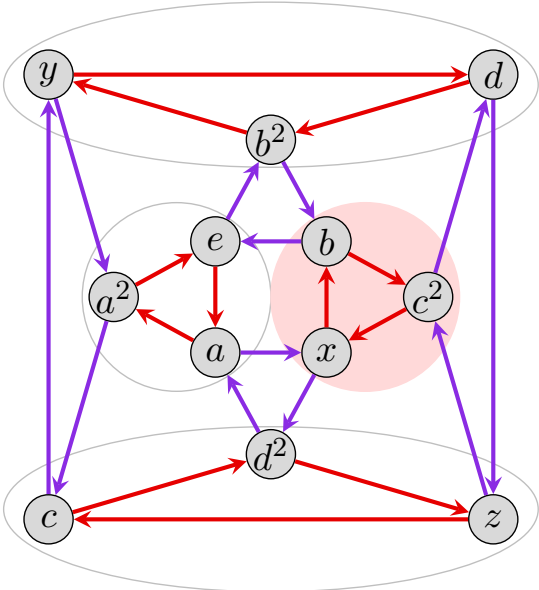
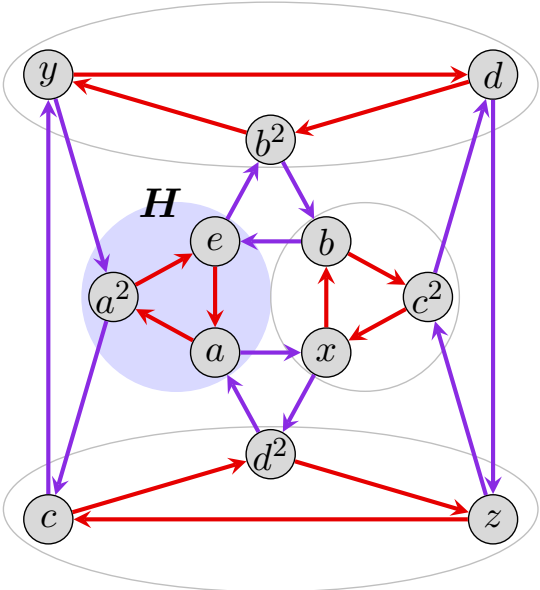
#1(a): Partitions of  $A_4$  by the right cosets of three of its subgroups.



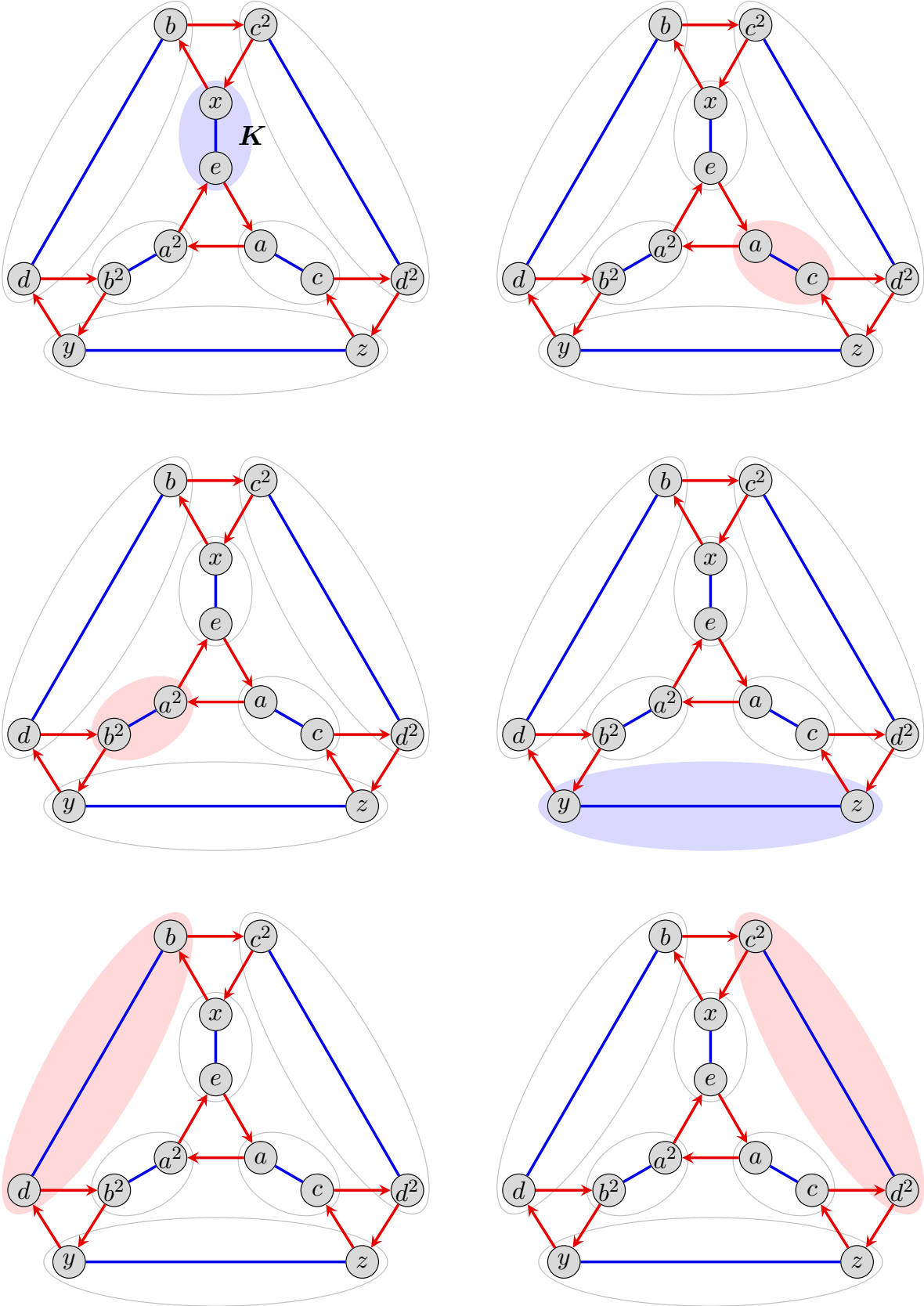
#1(b): Each left coset  $gN$  defines a conjugate subgroup  $gNg^{-1} \leq A_4$ .



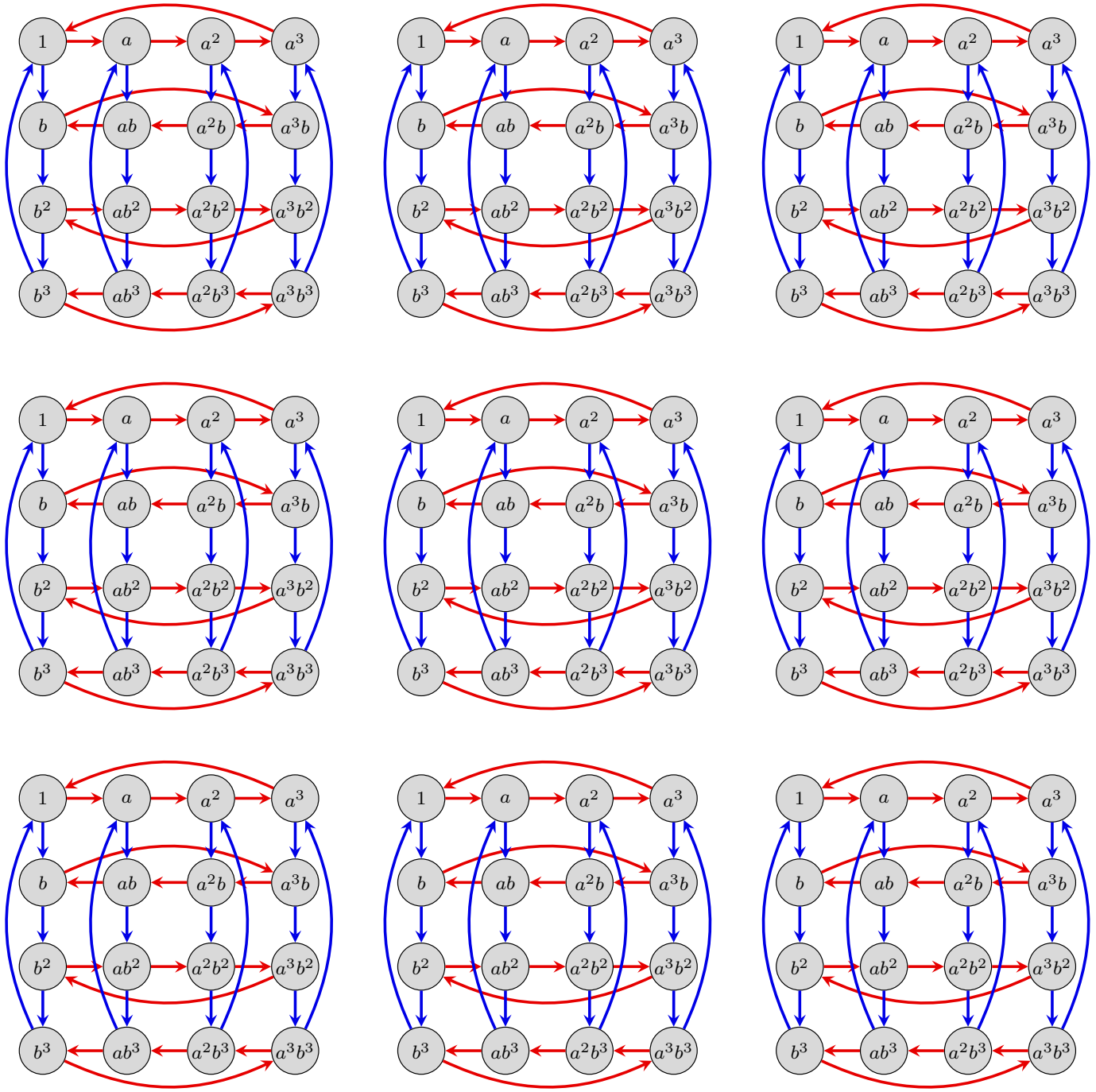
#1(b): Each left coset  $gH$  defines a conjugate subgroup  $gHg^{-1} \leq A_4$ .



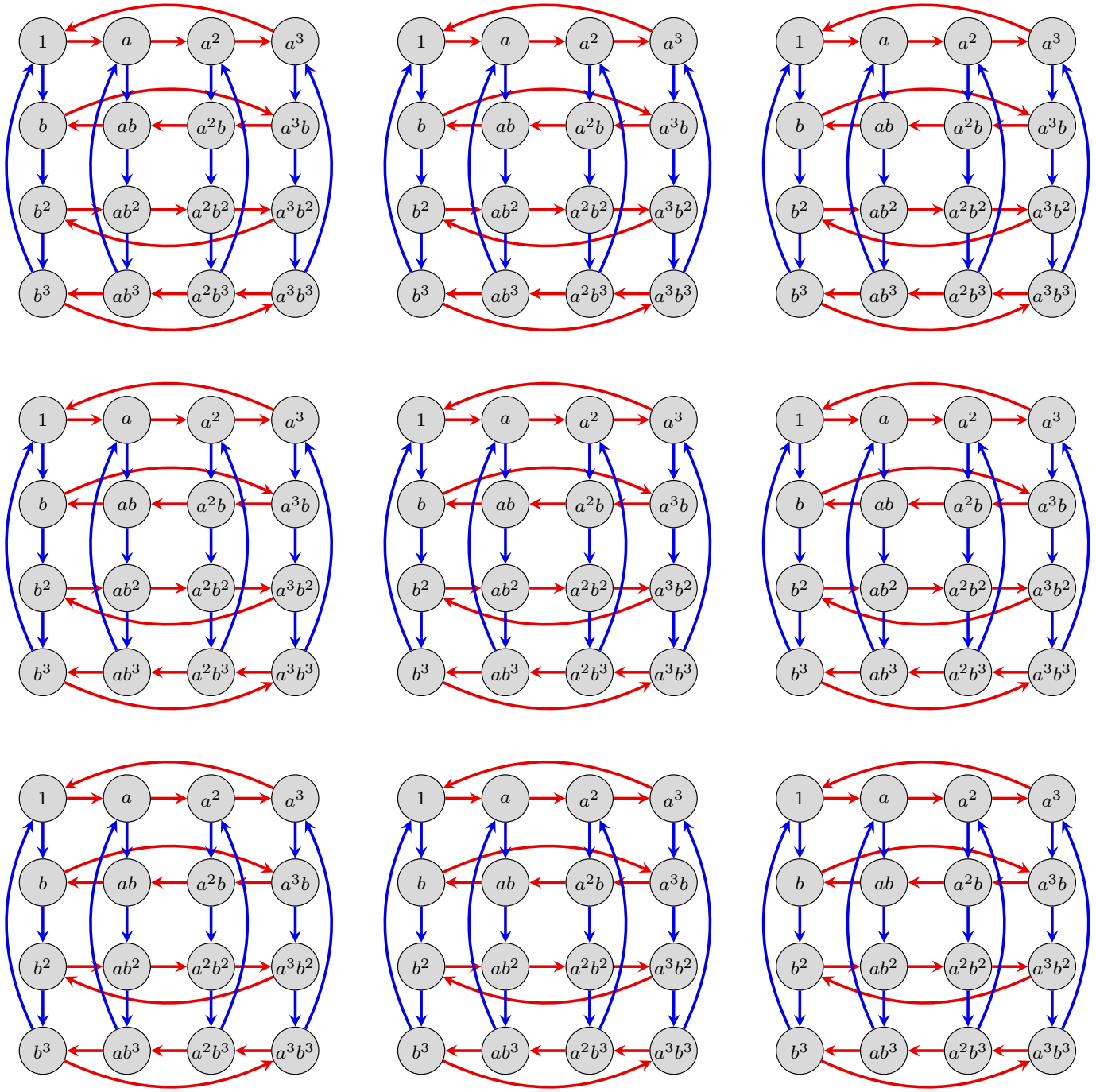
#1(b): Each left coset  $gK$  defines a conjugate subgroup  $gKg^{-1} \leq A_4$ .



#4(a): Three-step construction of the conjugate subgroups of  $H = \langle ab \rangle$  in  $C_4 \rtimes C_4$ : the subgroup  $H$  (left), the left coset  $xH$  (middle), and the conjugate subgroup  $xHx^{-1}$  (right).



#4(a): Three-step construction of the conjugate subgroups of  $K = \langle a^2, b^2 \rangle$  in  $C_4 \rtimes C_4$ : the subgroup  $K$  (left), the left coset  $xK$  (middle), and the conjugate subgroup  $xKx^{-1}$  (right).



#4(b): The subgroup lattice of  $C_4 \times C_4 = \langle a, b \rangle$ , with the subgroups written by generator(s).

