The subgroup axioms are satisfied, therefore the set forms a subgroup.
But the subgroup is not a normal subgroup, since it is not a union of conjugacy classes. The conjugacy classes containing (13) is $\{(13),(24)\}$; a normal subgroup must contain the whole conjugacy class of every member of the subgroup. 2/2

e) $\{e,(1234),(13)(24),(1432)\}$. Form the Cayley table.

$\circ$	e	(1234)	(1432)	$(13)(24)$
e	e	(1234)	(1432)	$(13)(24)$
(1234)	(1234)	$(13)(24)$	e	(1432)
(1432)	(1432)	e	$(13)(24)$	(1234)
$(13)(24)$	$(13)(24)$	(1432)	(1234)	e

SG1 The set is closed under composition
SG2 The identity is a member of the set
SG3 Each element has an inverse - The identity appears once in each column and once in each row.
This subgroup is normal, since it is a union of conjugacy groups:
$SG = \{e\} \cup \{(1234),(1432)\} \cup \{(13)(24)\}$

$\{e,(13)(24),(14)(23),(12)(34)\}$

$\circ$	e	$(13)(24)$	$(14)(23)$	$(12)(34)$
e	e	$(13)(24)$	$(14)(23)$	$(12)(34)$
$(13)(24)$	$(13)(24)$	e	$(12)(34)$	$(14)(23)$
$(14)(23)$	$(14)(23)$	$(12)(34)$	e	$(13)(24)$
$(12)(34)$	$(12)(34)$	$(14)(23)$	$(13)(24)$	e

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