

$$SG1) (s_1, 0), (s_2, 0) \in (A_3, \{0\})$$

$$(s_1, 0) \circ (s_2, 0) = (s_1 s_2, 0+0) = (s_1 s_2, 0) \in (A_3, \{0\})$$

$$SG2) e \in A_3, 0 \in \{0\}$$

$$(e, 0) \in (A_3, \{0\})$$

the identity

$$SG3) (s_1, 0) \in (A_3, \{0\}) \Rightarrow s_1 \in A_3, 0 \in \{0\}$$

$$\Rightarrow s_1^{-1} \in A_3 \Rightarrow (s_1^{-1}, 0) = (s_1, 0)^{-1} \in (A_3, \{0\})$$

$\therefore (A_3, \{0\})$  is a subgroup of  $G$ .