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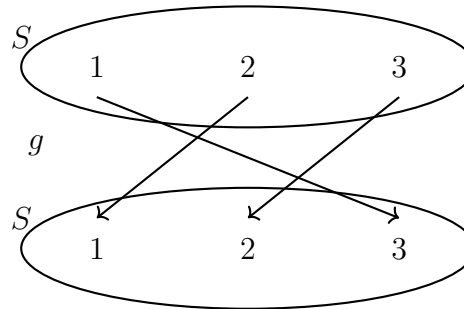
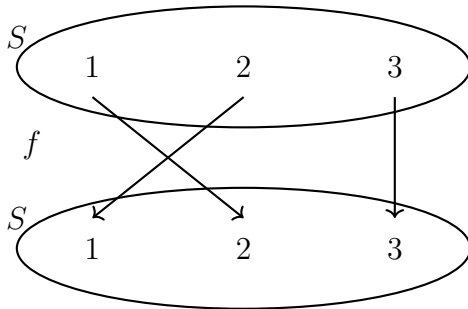
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Abstract Algebra Group Quiz 1 (Submit one per group)

Page 1 of 2

1. Let $S = \{1, 2, 3\}$. Consider the bijections $f : S \rightarrow S$ and $g : S \rightarrow S$.



1. Compute the following

(a) the composition $f \circ g$

(b) the composition $g \circ f$

(c) the inverse f^{-1} of f

(d) the inverse g^{-1} of g

2. Write down all other bijections from S to itself (match each function to its inverse function)

3. Let G be the set of all bijections from the set S to itself. Then the set G together with the function composition \circ forms a group.

(a) What is the identity element?

(b) Given an element $h \in G$, what is the inverse of h ?

(c) Is (G, \circ) an abelian group?

2. Give (and explain) two reasons why the set of odd integers under addition is not a group.

3. Below is a Cayley table for a group. Fill in the blank entries.

\star	e	a	b	c	d
e	e				
a		b			e
b		c	d	e	
c		d		a	b
d					