

Name: .....

Consider the elements  $f = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 \\ 2 & 4 & 3 & 5 & 6 & 1 \end{pmatrix}$  and  $g = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 \\ 2 & 3 & 1 & 4 & 6 & 5 \end{pmatrix}$  of  $S_6$ .

1] Compute  $f^{-1}$ .

2] Compute  $f^{-1} \circ g \circ f$ .

3] What is the problem (if any) with the following answer to question 2? Explain!

No explicit computations are needed! We have  $f^{-1} \circ g \circ f = g$ ,

because  $f^{-1} \circ g \circ f = f^{-1} \circ (g \circ f) = f^{-1} \circ (f \circ g) = (f^{-1} \circ f) \circ g = \text{id} \circ g = g$ .