Please do not post my solutions

Homework 15

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1. $\begin{pmatrix}1&2&3\\1&2&3\end{pmatrix}$ set: {} 0 inversions

$\begin{pmatrix}1&2&3\\1&3&2\end{pmatrix}$ set: {32} 1 inversion

$\begin{pmatrix}1&2&3\\2&1&3\end{pmatrix}$ set: {21} 1 inversion

$\begin{pmatrix}1&2&3\\2&3&1\end{pmatrix}$ set: {21, 31} 2 inversions

$\begin{pmatrix}1&2&3\\3&1&2\end{pmatrix}$ set: {31, 32} 2 inversions

$\begin{pmatrix}1&2&3\\3&2&1\end{pmatrix}$ set: {32, 31, 21} 3 inversions

2. 1523746 set: {52, 53, 54, 74, 76} 5 inversions

3. The initial state has no inversions, while the revision has one single inversion {15, 14}. One is odd, thus the puzzle must be unsolvable.

4. A group is a set with an operation combining 2 elements to form another element while being associative & having an identity element and inverse elements.

5. The product of the 2 matrices must ~~be~~ have det. = 1. The inverse of this must have det. = 1. The identity matrix must have det. = 1. Therefore, it must be a group.

6. I'm not sure how to do this. Sorry!