Worksheet 8

Say a permutation is *even* if it can be written as a product of an even number of transpositions, and *odd* otherwise.

1. Determine if $(1\,2\,3\,4)$ is even or odd.
2. Given a k-cycle, determine if it is even or odd.
3. Determine if $(1\,2\,\ldots\,19)(20\,21\,22\,23)$ is even or odd.
4. Is the identity even or odd?
5. Suppose A is an $n \times n$ matrix with determinant 1. If we permute the rows, what can you say about the determinant of the resulting matrix?