

Name: \_\_\_\_\_

**Directions:** Show all work. No credit for answers without work.

1. [**3 points**] Find the number of inversions in the permutation 5614273.

2. Evaluate the following determinants.

(a) [**4 points**]  $\det \left( \begin{bmatrix} 5 & -2 & 1 \\ 0 & 1 & -1 \\ 2 & 3 & 1 \end{bmatrix} \right).$

(b) [**3 points**]  $\det \left( \begin{bmatrix} 0 & 0 & 2 & 0 & 0 \\ 7 & 0 & 1 & 0 & -1 \\ 2 & 1 & 4 & 0 & 3 \\ -2 & 2 & 1 & 2 & 4 \\ 3 & 0 & -3 & 0 & 0 \end{bmatrix} \right).$