MATH 239 Supplementary 3: Permutations

This is a brief note on the notation for permutations that we use in this course. A permutation of $[n]$, is a bijection $\sigma : [n] \to [n]$, which can be thought of as a rearrangement of the elements of $[n]$.

We can write such a rearrangement as $(a_1 a_2 \dots a_n)$. We then say this represents the permutation σ where $\sigma(1) = a_1$, $\sigma(2) = a_2$, etc. You can think of this as $\sigma(i)$ represents the element at position i in the rearrangement.

For example, a permutation of $[4]$ is (3142). This represents the permutation $\sigma : [4] \to [4]$ where $\sigma(1) = 3$, $\sigma(2) = 1$, $\sigma(3) = 4$, $\sigma(4) = 2$.