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A Bijective Proof of a Derangement Recurrence,
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Abstract

The number of permutations of order n with no fixed points is called the n th derangement number, and is denoted by D_n . It is well-known that for $n > 1$, the derangement numbers satisfy the recurrence $D_n = nD_{n-1} + (-1)^n$. We present a simple combinatorial proof of this recurrence.