

Problem 4 (due Monday, March 30)

Let  $p > 2$  be an odd prime number. Integers  $a_1, a_2, \dots, a_{p+1}$  in the interval  $[0, p]$  have the following property: for every permutation  $\pi$  of the set  $\{1, 2, \dots, p+1\}$  the number  $\sum_{k=1}^{p+1} k a_{\pi(k)}$  is not divisible by  $p$ . Prove that  $a_1 = a_2 = \dots = a_{p+1}$ .

Ashton Keith, a freshman majoring in math, is the only person who solved the problem. His solution is based on a different idea than our solution. Both solutions are discussed in the following link [Solution](#)

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