

Time limit: 15 minutes.

Instructions: This tiebreaker contains 3 short answer questions. All answers must be expressed in simplest form unless specified otherwise. You will submit answers to the problem as you solve them, and may solve problems in any order. You will not be informed whether your answer is correct until the end of the tiebreaker. You may submit multiple times for any of the problems, but **only the last submission for a given problem will be graded**. The participant who correctly answers the most problems wins the tiebreaker, with ties broken by the time of the last correct submission.

No calculators.

1. There is a circular table with 6 chairs. Alice, Bob, and Eve each pick a random chair to sit down in. Compute the probability that each person is sitting next to two empty chairs.
2. $ABCDEF$ is a regular hexagon, and diagonal AC has length 6. Find the area of hexagon $ABCDEF$.
3. Let n be the number which consists of the first 2014 positive integers concatenated together. Let $f(x)$ be the sum of the digits of x , and let $g(x)$ be the value obtained by applying f repeatedly to x until it converges to a single value. Compute $g(n)$.