

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. Andrew flips a fair coin 5 times, and counts the number of heads that appear. Beth flips a fair coin 6 times and also counts the number of heads that appear. Compute the probability Andrew counts at least as many heads as Beth.
2. How many alphabetic sequences (that is, sequences containing only letters from $a \dots z$) of length 2013 have the letters in alphabetic order?
3. Suppose two equally strong tennis players play against each other until one player wins three games in a row. The results of each game are independent, and each player will win with probability $\frac{1}{2}$. What is the expected value of the number of games they will play?