

Jesse Humberd Scholarship

Turn into Dr. Johnson by 2/11/2021

PROBLEM 3: SIX RACES

Gracie and Lancel are practicing their 100-meter sprints by running 6 races against each other. Gracie wins the first race, and after that, the probability that one of them wins a race is $\frac{2}{3}$ if they won the previous race but only $\frac{1}{3}$ if they lost the previous race. The probability that Gracie will win exactly 5 of the 6 races is $\frac{m}{n}$, where m and n are relatively prime positive integers. Find $m + n$.