

# Tiebreaker Round

DMM 2021

## 1 Tiebreaker

1. You are standing on one of the faces of a cube. Each turn, you randomly choose another face that shares an edge with the face you are standing on with equal probability, and move to that face. Let  $F(n)$  the probability that you land on the starting face after  $n$  turns. Supposed that  $F(8) = \frac{43}{256}$ , and  $F(10)$  can be expressed as a simplified fraction  $\frac{a}{b}$ . Find  $a + b$ .