

MATH 242 — 19 Nov. 2025

1D Random Walks

A 1D simple symmetric random walk visits each integer infinitely many times.

Proof hinges on:

expected number of returns to origin $\sim \sum_{k=1}^{\infty} \frac{1}{k^{1/2}}$

diverges

$$p = \frac{1}{2} < 1$$

Today: 2D random walks

simple: integer locations

symmetric: equally likely to move in any of the 4 coordinate directions.

