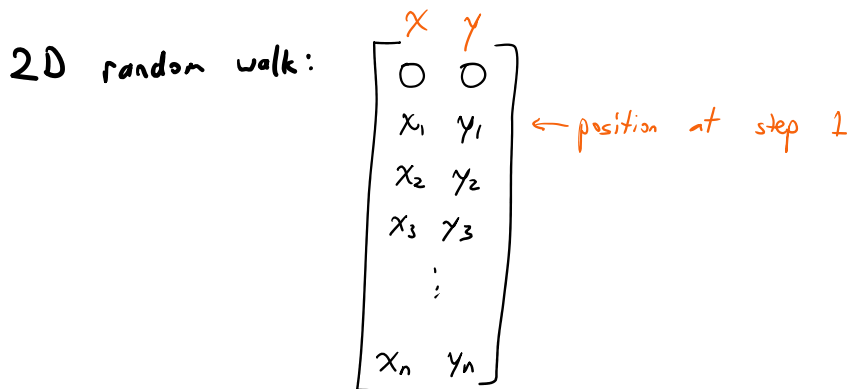


## 1D Random Walks

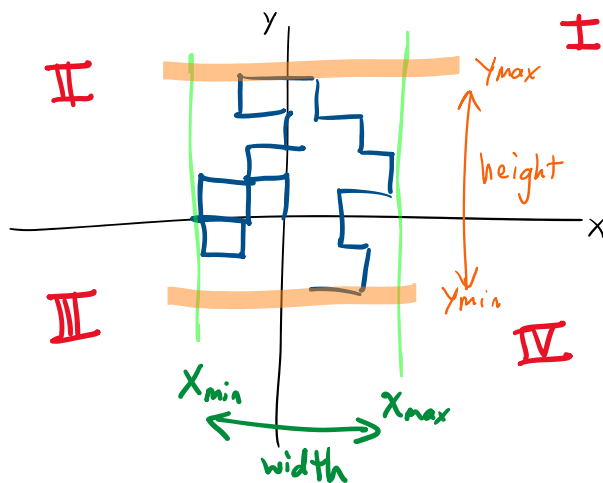
- After  $n$  steps, the average distance from the origin is proportional to  $\sqrt{n}$ .
- Return to the origin many times — infinitely many times, with probability 1.
- Visits every integer value infinitely many times

## 2D Random Walks

How are 2D random walks same as or different from 1D?



diameter of a 2D random walk:



define:

$$\text{diameter} = \max(\text{width}, \text{height})$$