

Monthly Mindbenders

February, 2026

Problem

A bacterium begins at the origin on the plane grid. At time 1, it divides into two bacteria that will sit just north and east of the parent, that is, at points $(0, 1)$ and $(1, 0)$. In general, at any time, any bacterium that has room to divide may do so; that is, if a bacterium sits at the point (x, y) , it may be replaced by a bacterium at $(x, y+1)$ and another at $(x+1, y)$ if those points were unoccupied.

Roughly, how many divisions must take place before the closed box with corners at $(0,0)$, $(0,3)$, $(3,3)$, and $(3,0)$ is clear of bacteria?

Variation of a puzzle posed by Fields Medal winner Maxim Kontsevich.