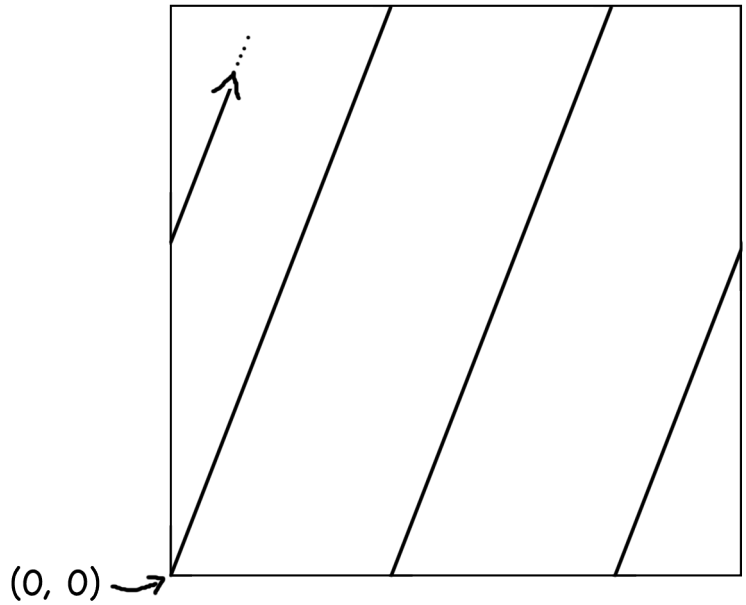
## Handout: Do we hit everything?

Consider the line:

$$y = mx$$

on the unit square, where $m$ is an irrational number




Obviously $(0, 0)$ is on the line $y = mx$.

Either: 1) or 2)

1. Find a second point (A, B) that y = mx hits where A and B are rational (ie fractions) between 0 and 1.

   or

2. Show that there are **NO** rational numbers $A$, $B$ such that $(A, B)$ is on the line $y = mx$ in this square.