Advanced 2

Kakeya's Squeegee (Warm-Up)

Prepared by Matthew Kowalski on October 9, 2025
Inspiration taken from Mathologer's "The Kakeya needle problem (the squeegee approach)"

Suppose that you are cleaning a window. You have your squeegee (a line segment of length 1) placed on line A and you want to move it to line B (distance 1 from A).

However, in an act of rebellion, you want to *clean the smallest area of window possible.*

What is the smallest area you can come up with? How do you do it?
Note: we consider the window to be infinite, so you can move the squeegee anywhere.
Hint: You can rotate the squeegee.