Barge Problem #3

A Frankensteinian effort to bring math to life

The Lafayette Mathematics department has recently been working on a top-secret project with the Lafayette Biology department. Their goal is to turn every \((x, y)\) point in the \(\mathbb{R}^2\)-plane into a 2-dimensional living cell! In fact, hidden in the bowels of Kunkel is all of \(\mathbb{R}^2\) wired up to an array of high-voltage machinery and surrounded by a vast network of bubbling test tubes – it is Frankensteinian at its best!

After months of failed attempts the unbelievable happened just this past week – life has been created! When viewed under a microscope each point on the plane has morphed into one of three distinct new life forms. Upon even closer examination it is noticed that these life forms are quite territorial and are constantly vying for position so that no two cells of the same form are exactly 1 unit apart. For unknown reasons, only if such an arrangement can be found will these life forms be at peace.

The question is: Can these life forms ever find an arrangement that will bring them peace or have Lafayette researchers created life that is forever in turmoil? (Note: In this scenario cell never die and no two cells can occupy the same point.)

Due by 6am on Saturday, February 24th. Neatly written or typed submissions may be emailed to bloomjs@lafayette.edu.