Consider the definition of the classical derivative $f'$ of a function $f$. The construction of this concept relies on the ideas of length and slope. But if we change our perception of length and slope, then we can get some wacky new definitions of the derivative, such as the geometric derivative $f^*$ which is a key part of constructing calculus in an exponential sense. We could go even further: create an abstract arithmetic, define derivatives in a more general abstract sense, and then observe the crazy consequences!

Let’s explore what happens when we alter our foundation of arithmetic and try to adapt the familiar theorems from Calculus I into Abstract Calculus I!