NEWTON'S METHOD

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Newton's method is a classical method for finding roots of a given function. It is often taught in calculus or numerical analysis classes. When a good initial guess is made, the method converges very fast to a root of the function.

In this project, we will explore generalizations of Newton's method. We will start with learning the classical method. One generalization we will explore is Newton's method over the complex numbers, which leads to amazing images called Newton fractals. Another generalization we would investigate is Newton's method over finite fields.

Prerequisites.
- Familiarity with complex numbers, ideally a course in complex analysis.
- Some familiarity with finite fields (integers modulo p) and basic ring theory (familiarity with the quaternions will be useful).
- Coding experience. We will mostly be using Python and SageMath. Familarity with using objects such as complex numbers will be useful.