The Shape of Polynomial Map x ? kx^n Mod P

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In this project we aim to study the structures of graph, generated by the transformations x? kx^n in Zp, with the goal to obtain results, in a sense equivalent to the result in Lee Deville's paper "On the shape of x? x^2 mod m" but for wider array of functions. Using classical number theory, we provide results on the structure of the connected components of such graphs and their isomorphisms, which can then be lifted for an arbitrary (non-prime) number through Kronecker products.

Awards Won:
American Mathematical Society: One-Year Membership to American Mathematical Society to each winner (7 winning projects, up to 3 team members per project)
American Mathematical Society: Third Award of $500