Hypocycloids and Hypotrochoids

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Abstract
This paper compiles several theorems relating to hypocycloids and epicycloids with the aim of providing a project for calculus students interested in a further understanding of polar curves. Experiments lead to finding connections between hypocycloids, hypotrochoids, and rose curves. Throughout, there is a direct connection between characteristics of the parametric equations and easily identifiable visual aspects of the corresponding curves. GeoGebra is used extensively. Relationships with circulant graphs and ancient Greek models of planetary orbits are also described.

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