# Kepler's Laws Simulations

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I focused my project on the learning objectives surrounding Keplers laws:

- Use Kepler's three laws to describe the motion of the planets.
- Understand and use Newton's version of Kepler's 3rd law

I tackle both of these learning objectives not only in the explainations visible in the final product, but also in the realization of the project. Initially I used Newton's law of gravitation to program a simulation of an orbiting planet to then prove Kepler's laws, but I ran into issues in making the program efficient to run in the web browser. Instead I used Kepler's laws and used his formulae to instead parameterize an ellipse and then animate the planet's orbit along that ellipse. I also used Kepler's relations between eccentric anomaly and true anomoly to plot the areas swept out by an orbiting planet.

In the explainations accompanying the simulations, I tried to summarize the content effectively and briefly, leaving the interactivity to build the understanding in the user. Ultimately, from the begining, I believe that being able to tinker with the course concepts will make them stick and give students and the public a good working understanding of the science.

I also released the code and webpage to the public, so other students, scientists and professors can hopefully use it to help spark people's curiosity of astronomy.

## Bibliograpy:

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