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Simulating a Transfer Orbit

Our goal is to simulate a transfer orbit of a satellite or other object between two circular orbits of different radii in the same plane. We will have an object orbiting around a fixed body with the mass of the earth, and initiate an instantaneous change in velocity to break out of its current circular orbit and into a new orbit of larger (or smaller) radius. This change in velocity will happen at a certain time 't' and continue until it reaches the desired orbital radius.

We will study how changing the magnitude of the instantaneous acceleration affects the time it takes to complete our transfer orbit and will also study how changing the desired radius (the one we want to speed up/slow down into) will affect the time it takes to complete and the acceleration needed to complete it.