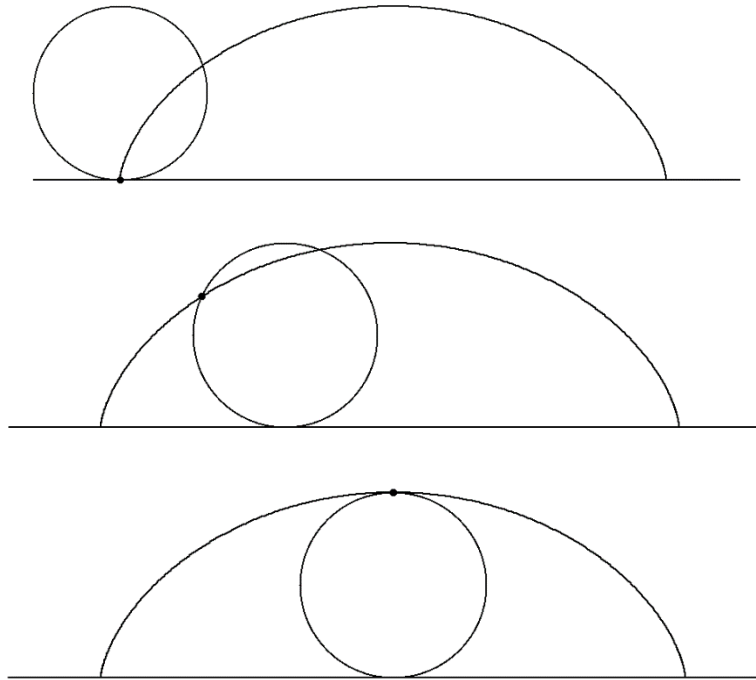


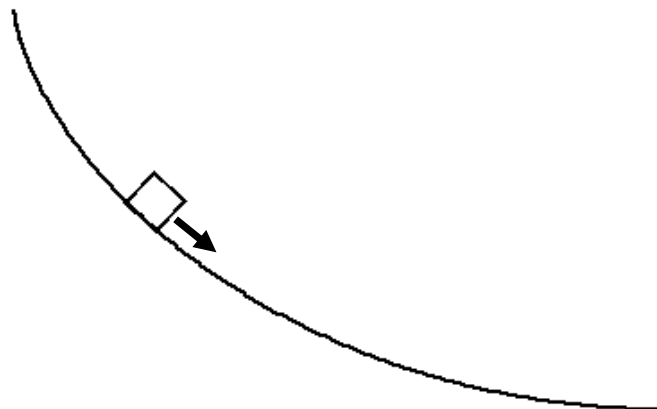
Cycloids

A cycloid is a little-known geometric figure, yet it is easy to generate from a circle. Fix a point on the circle and roll the circle on the ground. The locus followed by the point is a cycloid.



Despite its naturalness and simplicity, the cycloid is little known, yet it has many interesting properties. If you invert a cycloid and drop a small weight down it, the time of arrival at the bottom is independent of where the weight started. The farther up it starts the more vertical it starts and travels the rest of the path faster, exactly making up for the extra distance.

The cycloid is also the path of least time from the top to the bottom, beating even a straight line, which is the shortest distance ramp.



The cycloid can also be used to make an unusual pendulum, as shown below. Allowing the pendulum to be a weight on a flexible arm like a string, the string wraps around the cycloid as the weight oscillates. The resulting pendulum has a constant time of swing, regardless of how widely it swings. The path of the weight is still another cycloid.

