Cycloid*

Cycloids are generated by rolling a circle on a straight line and tracing out the path of some point along the radius.
The parametric equation for such a cycloid is:

$$x(t) = aa \cdot t - bb \cdot \sin t$$
$$y(t) = aa - bb \cdot \cos t,$$

where aa is the radius of the rolling circle and bb is the distance of the drawing point from the center of the circle.

The choice $bb = aa$ gives the standard cycloid.

Cycloids have other cycloids of the same size as evolutes, see the Action Menu Entry *Show Osculating Circles with Normals*. This fact is responsible for Huyghen's cycloid pendulum having its period independent of the amplitude of the oscillation.

H.K.

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* This file is from the 3D-XplorMath project. Please see:

http://3D-XplorMath.org/