

Cycloid

The cycloid in Figure 1 is the path a point on the circle radius a follows as the circle rolls from left to right.

Find,

1. parametric equations for the cycloid.
2. the length of one arch of the cycloid.
3. the area of the surface produced when one arch of the cycloid is revolved around the x -axis.

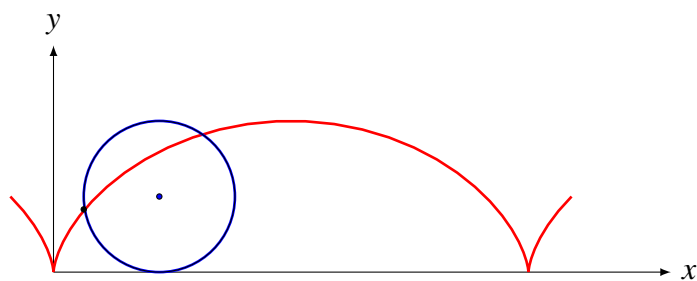


Figure 1: Cycloid generated by circle radius a rolling left to right.