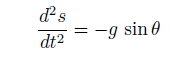
Given the equation , now we want to find a parametrization of this cycloid.

The second law gives us:



Combining these two equations

s=g/K sinθ

Differentiate the equation

ds = g/K cosθ dθ (1)

On the other hand, ds=. And Since the normal component of the speed is 0:

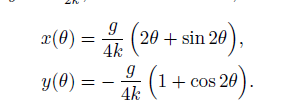
(2)

Combining the two equation, we get ds = dx / cos θ,

substitute (1) into it

From equation(2) we get

Multiply both sides with dt and integrate both sides, we get



Now we can show such curve is a cycloid