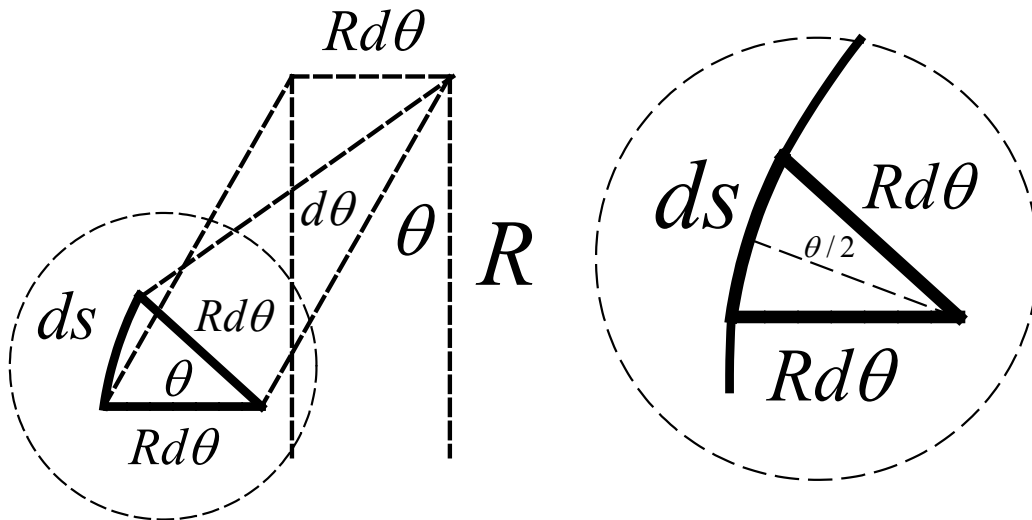
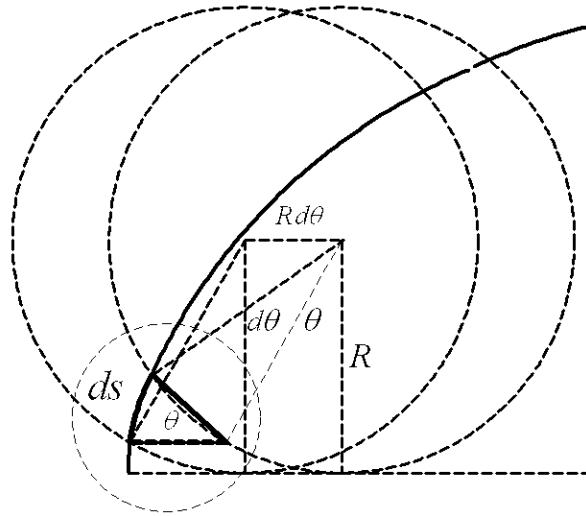


PROOF WITHOUT WORDS ARC LENGTH OF THE CYCLOID

Thomas J Osler
Mathematics Department
Rowan University
Glassboro NJ 08028

Osler@rowan.edu



$$ds = 2R \sin(\theta/2) d\theta$$

$$s = 2R \int_0^{2\pi} \sin(\theta/2) d\theta = 4R [-\cos(\theta/2)]_0^{2\pi} = 4R [1 - (-1)] = 8R$$