Viviani's curve

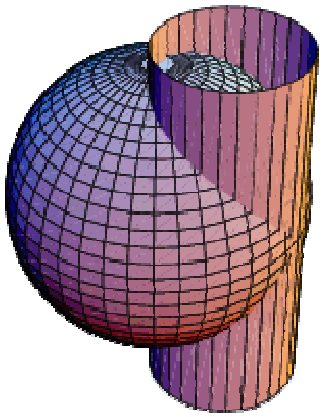
This curve is given by intersecting the unit sphere of radius **2*a*** with equation

$$x^2 + y^2 + z^2 = 4a^2$$

with the cylinder centered at **(*a*, 0, 0)** of radius ***a*** given by

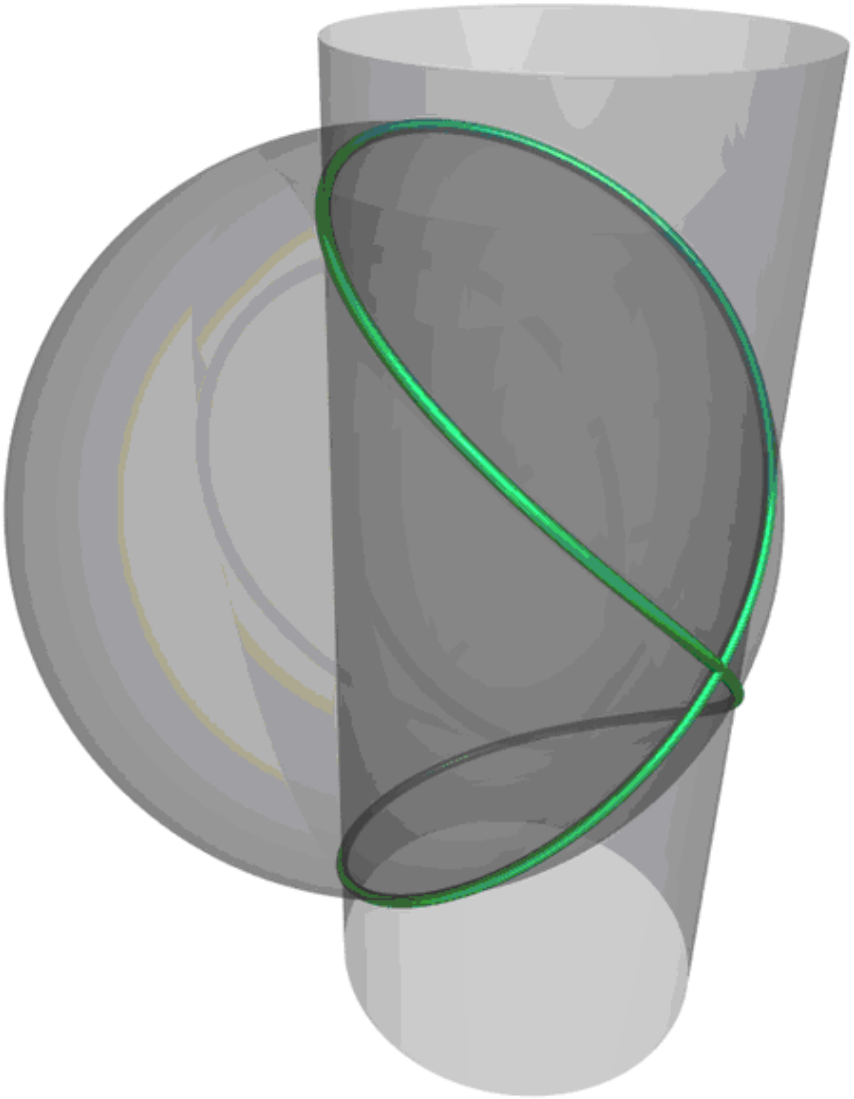
$$(x - a)^2 + y^2 = a^2.$$

For the example in the notes we have ***a* = 1.** This curve was first studied by Vincenzo Viviani (1622 – 1703)**.**



(Source: http://mathworld.wolfram.com/VivianisCurve.html)

These two surfaces meet transversely everywhere except at the point **(2*a*, 0, 0).** The curve looks like a figure eight centered at **(2*a*, 0, 0).** An illustration appears on the next page**;** the parametric equations for the curve when ***a* = 1** are given in the notes**.**



(Source: http://en.wikipedia.org/wiki/Sphere%E2%80%93cylinder_intersection)