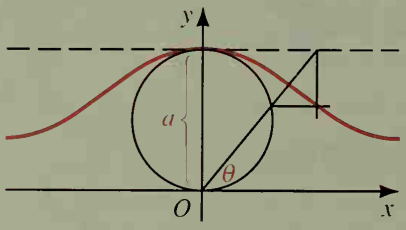
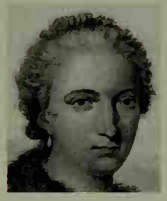
Biographical Note

Maria Gaetana Agnesi





Maria Gaetana Agnesi (1718–1799) was born in Milan, Italy. A child prodigy, she had mastered seven languages by the age of thirteen. Between the ages of twenty and thirty she compiled the works of the mathematicians of her time into two volumes on calculus, called *Analytical Institutions*. This was an enormous task, since the mathematicians had originally published their results in different languages and had used a variety of methods of approach.

Agnesi's volumes were praised as clear, methodical, and comprehensive. They were translated into English and French and were widely used as textbooks. One of the most famous aspects of Agnesi's volumes was an exercise in analytic geometry and the discussion of a curve called a *versirea*, shown at the left below. The name, derived from the Latin *vertere*, "to turn," was apparently mistranslated into English texts as "witch." Thus the curve is commonly known as the "witch of Agnesi."

Due to Agnesi's scholarship, she was elected to the Bologna Academy of Sciences and in 1750 she was appointed honorary professor in mathematics at the University of Bologna, shown at the left.

Explorations

These exploratory exercises can be done using a computer with a program that draws and measures geometric figures.

Draw parallelogram *ABCD*. Draw four circles as follows.

(1) Use *A*, *B*, and *D* to draw circle *E*.
(2) Use *A*, *D*, and *C* to draw circle *F*.
(3) Use *B*, *C*, and *D* to draw circle *G*.
(4) Use *A*, *B*, and *C* to draw circle *H*.

Connect the centers of the circles to get quad. *EFGH*.
Compare quad. *ABCD* with quad. *EFGH*. What do you notice?

Repeat on other types of quadrilaterals: a rhombus, a trapezoid, a rectangle, and an isosceles trapezoid. What do you notice?