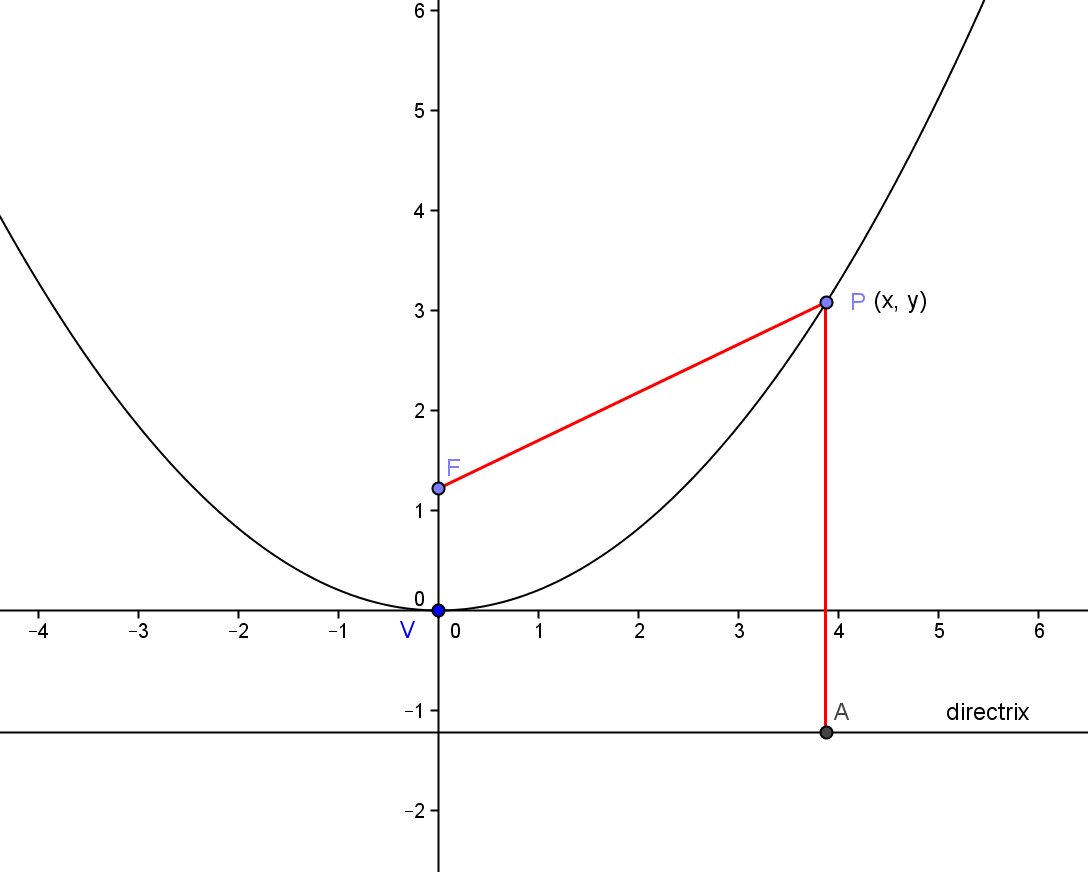
The Equation of the Parabola Function I



Since the distance from any point P(x, y) on the parabola to the focus F(0, p) is the same as the distance from P(x, y) to the directrix, y = -p , we can use the distance formula:

And from this we get .

Expanding both sides gives .

Cancelling and regrouping gives or . Notice that in the parabola, the x is of second degree and the y is linear.

A similar argument produces the equation of the parabola that opens down.