

The Parabola

The parabola is given by the equation

$$y = x^2.$$

To enter its equation in the formula field we have to write the formula in a way such that it equals zero:

$$x^2 - y = 0$$

The small roof sign symbolizes the exponent. Thus

$$x^2 = x^2.$$

We add two parameters:

$$a \cdot x^2 - y + b = 0.$$

The parameter a is used for compression and dilation of the parabola, the parameter b to change the distance of the parabola to the origin.

Insert the parameters a and b in the SURFER-formula and change them. How do you have to change the formula, such that the parabola is turned upside down?