

Quadratic regression

In the same way that we used the linear regression function to model data that behave “almost” linearly, we can apply similar statistical techniques to identify the quadratic function that best fits a set of data that behave “almost” quadratically.

Quadratic functions, by virtue of their concavity, have characteristic behaviors. When a quadratic function is *concave up*, then

- on any interval where it is increasing, it will increase more and more rapidly across the interval; and
- on any interval where it is decreasing, it will decrease more and more slowly across the interval.

When the function is *concave down*, then

- on any interval where it is increasing, it will increase more and more slowly across the interval; and
- on any interval where it is decreasing, it will decrease more and more rapidly across the interval.

In all of these situations, you will find that *the rate of increase of the function will change linearly*.

Your calculator will determine the formula of the **quadratic regression** function for a given set of data points (STAT CALC QuadReg).