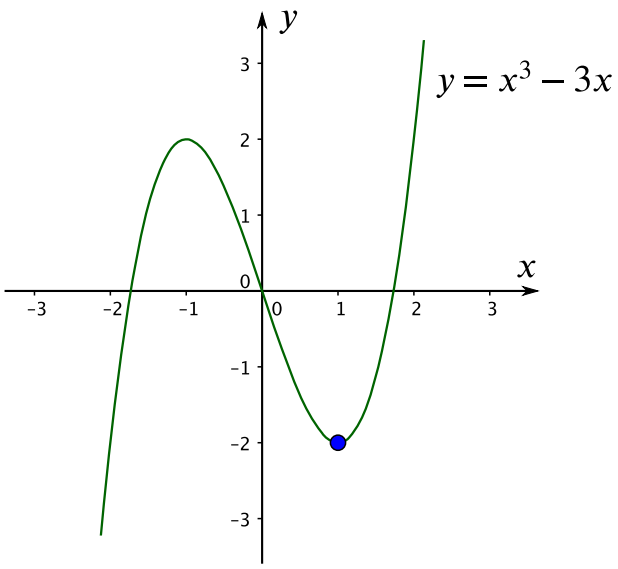
Local

A property is called *local* if it relates only to things very close to the point of interest.

For example, the function $f(x)$ has a *local minimum* at x_0 if $f(x_0) \leq f(x)$ whenever x is very close to x_0. But there could be values of x with $f(x) < f(x_0)$ when x is further away, as shown in this sketch.



Here, $f(x) = x^3 - 3x$ has a local minimum at $x = 1$, as the point $(1, -2)$ is lower than all the points nearby. However, there are other points on the graph which are lower, such as $(-3, -18)$, so $f(x)$ does not have a global minimum at $x = 1$.

A *local maximum* is defined similarly.