

Definitions of Extrema

Extrema = Extreme Values = Maxima or Minima = Maximum or Minimum Values
Extremum = Extreme Value = Maximum or Minimum = Maximum or Minimum Value

Definition of Extrema (or Absolute Extrema or Global Extrema)

Let f be a function defined on an interval I containing c .

1. $f(c)$ is the **minimum** (or **absolute minimum** or **global minimum**) of f on I if $f(c) \leq f(x)$ for all x in I .
2. $f(c)$ is the **maximum** (or **absolute maximum** or **global maximum**) of f on I if $f(c) \geq f(x)$ for all x in I .

Definition of Relative Extrema (or Local Extrema)

Let f be a function defined on an interval I containing c , where c is not an endpoint of I .

1. $f(c)$ is a **relative minimum** (or **local minimum**) of f if $f(c) \leq f(x)$ for all x in some open interval containing c .
2. $f(c)$ is a **relative maximum** (or **local maximum**) of f if $f(c) \geq f(x)$ for all x in some open interval containing c .

In these cases f is said to have a **(relative) maximum** or **minimum at** $(c, f(c))$.