

Extrema

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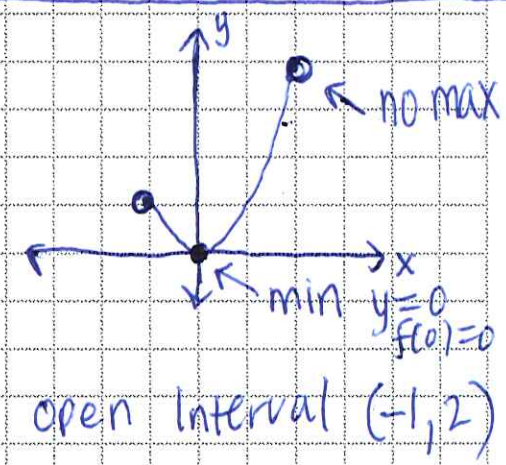
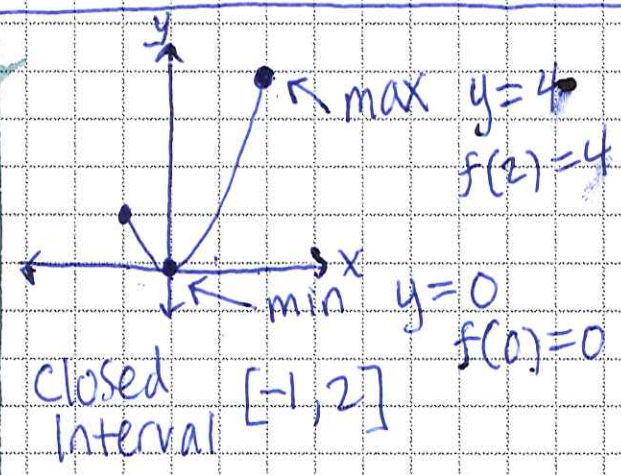
- ES:
- Does the function have a maximum and/or minimum value?
 - What is an extrema and how do we find it?

The minimum and maximum of a function on an interval are the extreme values, also called extrema.

Definition

- $f(c)$ is the minimum when $f(c) \leq f(x)$ Smallest y-value
- $f(c)$ is the maximum when $f(c) \geq f(x)$ Largest y-value

Example



Extreme Value Theorem

If f is continuous on a closed interval $[a, b]$ then f has both a min and max on the interval.

Relative (Local) Extrema on an open interval (a, b)

Relative min
The "valley" of a graph

Relative max
The "hill" of a graph

