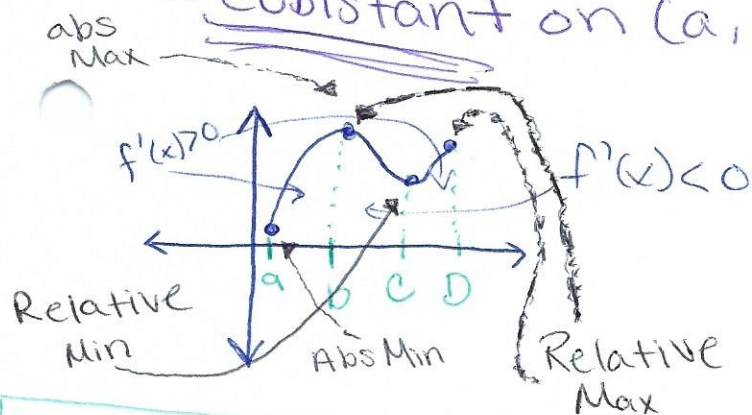


Increasing/decreasing functions

Theorem: Let f be continuous and differentiable on an open interval (a, b) .

- If $f'(x) > 0$ for every x in (a, b) , then f is increasing on (a, b) .
- If $f'(x) < 0$ for every x in (a, b) , then f is decreasing on (a, b) .
- If $f'(x) = 0$ for every x in (a, b) , then f is a constant on (a, b) .



Relative Extrema

- A function f has a local relative maximum at $x=c$ if there is an interval (a, b) containing c such that $f(x) \leq f(c)$ for all x in (a, b) .
- A function f has a relative minimum at $x=c$ if $f(x) \geq f(c)$ for all x in (a, b) .

Absolute Extrema

- If $f(x) \leq f(c)$ for all x in the domain of f , then $f(c)$ is the global absolute minimum of f .
- If $f(x) \geq f(c)$ for all x in the domain of f , then $f(c)$ is the absolute maximum of f .

