A point x=c is a local maximum (minimum) of f(x) if there exists an open interval (a,b) such that for a point c in (a,b), and for all x in (a,b):

- $f(x) \leq f(c)$
- (Or, for minimums, $f(x) \geq f(c)$)

Something can be both a local and a *global* maximum

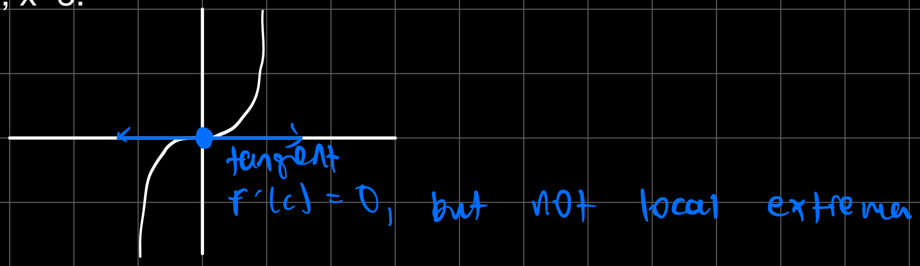
Endpoints can't be local minimums or maximums because they are not defined on open intervals

Local Extrema Theorem

If x=c is a local extrema of f(x) and f'(c) exists, then f'(c) = 0

Note that the converse is not true: if f'(c) = 0, then c is not necessarily a local extrema

For example, x^3:



If x=c is a local extrema, if is not necessarily continuous or differentiable at x=c