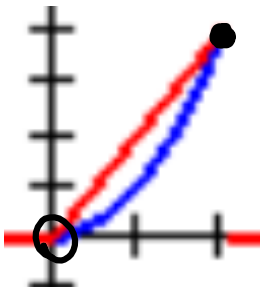
18. $f(x) = x^2, \quad 0 < x \leq 2$



f is increasing

yes on $0 < x \leq 2$

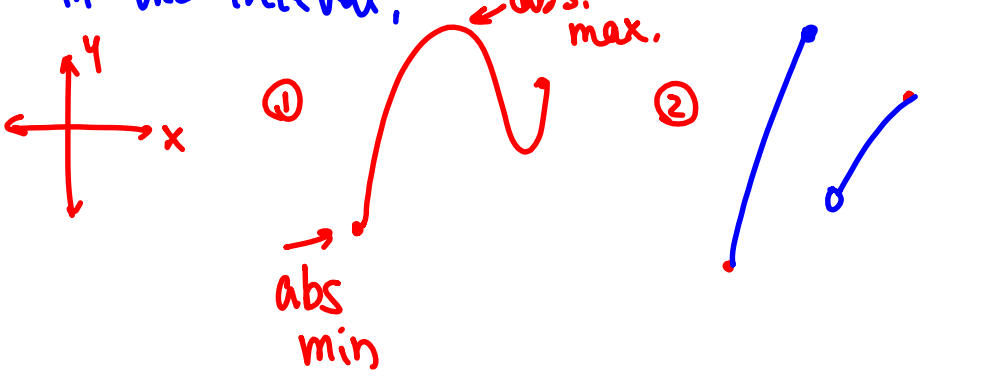
$(f' > 0)$

closed interval (abs.) max is 4 at $x = 2$

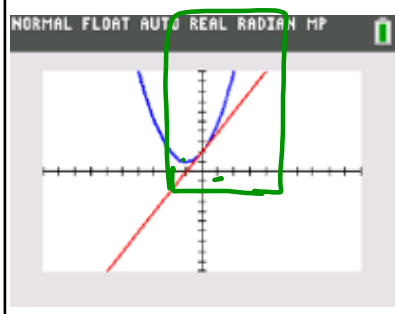
open int. ← min: None

extreme value thm. [EVT]

For $y = f(x)$, if $f(x)$ is continuous on $[a, b]$, then there is abs. min/max in the interval.



22. $f(x) = 1 + (x+1)^2, \quad -2 \leq x < 5$



f is increasing ($f' > 0$) on $(-1, 5)$

f is decreasing ($f' < 0$) on $[-2, -1)$

local max at $x = k$

f' changes from + to −

f has local min at $x = -1$

abt $x = -1$,

f' changed from − to +