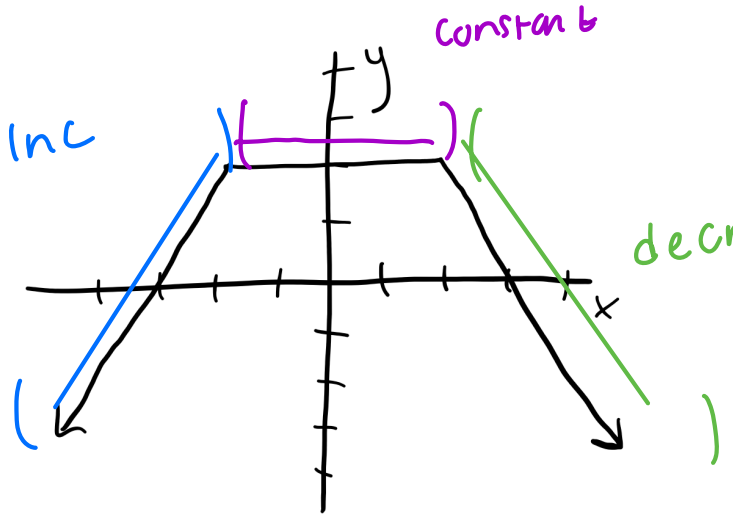
Look at graph left → right :

- Function values increase : function is increasing
- Function values decrease : function is decreasing
- Function values stay same : function is constant

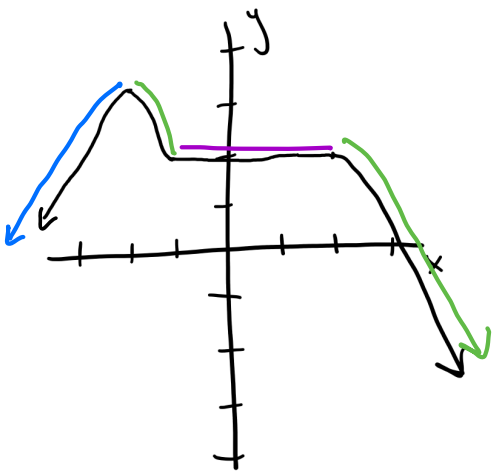


inc : $(-\infty, -2)$

const : $(-2, 2)$

dec : $(2, \infty)$

Ex 1) Determine the intervals on which the function is:



(a) Increasing :

$(-\infty, -2)$

(b) Decreasing :

$(-2, -1) \cup (2, \infty)$

(c) Constant :

$(-1, 2)$

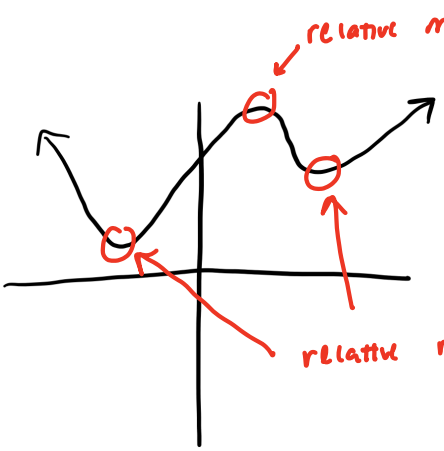
x-values (inputs)

Look at slope!

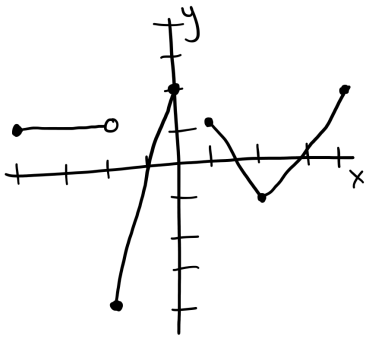
(+) slope → increasing

(-) slope → decreasing

slope of 0 → constant



Ex 2) Find the following given the graph:



(a) Domain: $[-4, 0] \cup [1, 4]$

(b) Range: $[-4, 2]$

(c) Intervals of Increase: $(-2, 0) \cup (2, 4)$

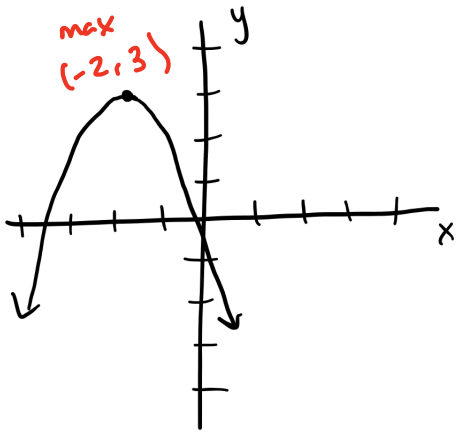
(d) Intervals of Decrease: $(1, 2)$

(e) Constant Intervals: $(-4, -2)$

(f) All x such that $f(x) = 2$ $x = 0, x = 4$

(g) $f(-2) = -4$

Ex 3) Find the following:



(a) Relative maxima? Yes

If so, what is the value & where does it occur?

value: 3

occurs at (-2,3), when $x=-2$

(b) Relative minima? NO

If so, what is the value & where does it occur?

(c) Intervals of Increase: $(-\infty, -2)$

(d) Intervals of Decrease: $(-2, \infty)$

(e) Intervals of constant: NONE