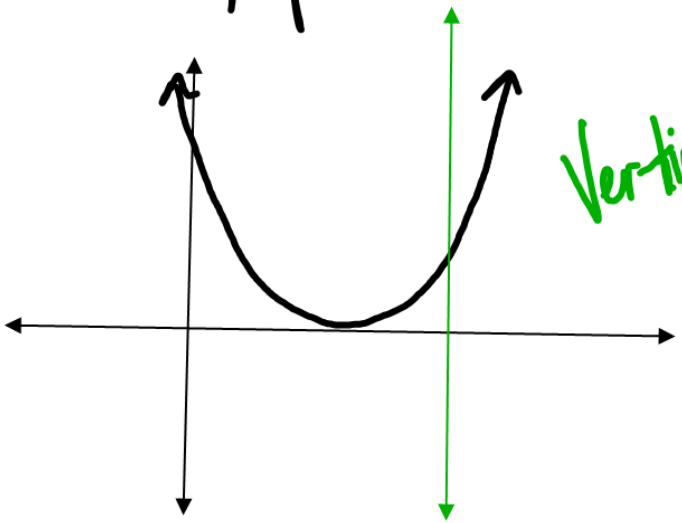
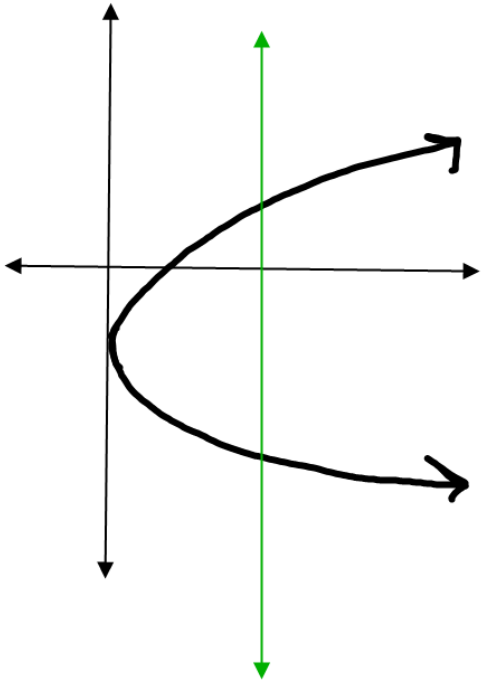
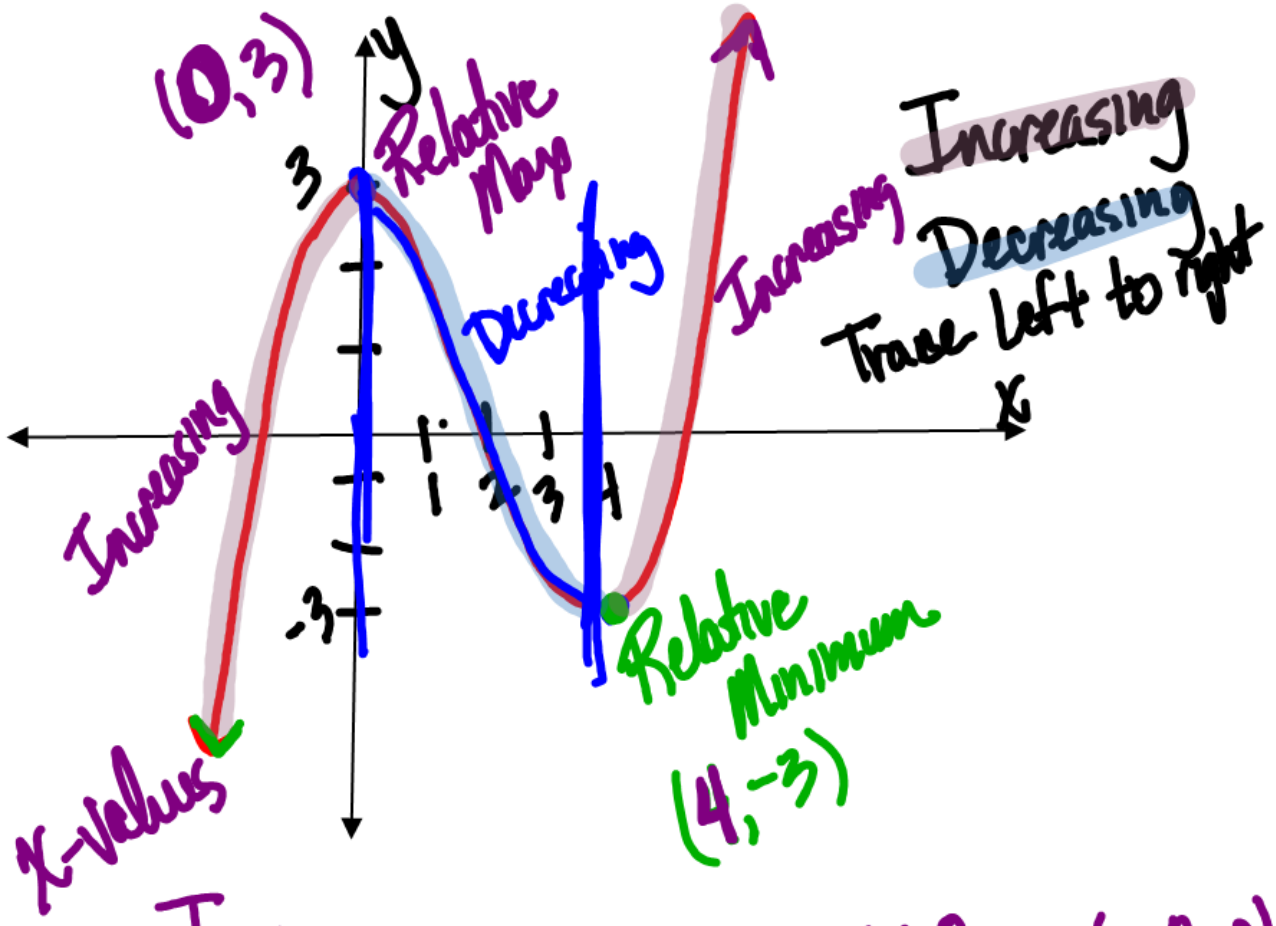
1.5 Graphs of Functions



Vertical Line Test



Not a function



Increasing $-\infty < x < 0$ $(-\infty, 0)$

$4 < x < \infty$ $(4, \infty)$

Decreasing $0 < x < 4$ $(0, 4)$

21 Decreasing

$(-\infty, 2)$ $-\infty < x < 2$

Increasing

$(2, \infty)$ $2 < x < \infty$

Step Function

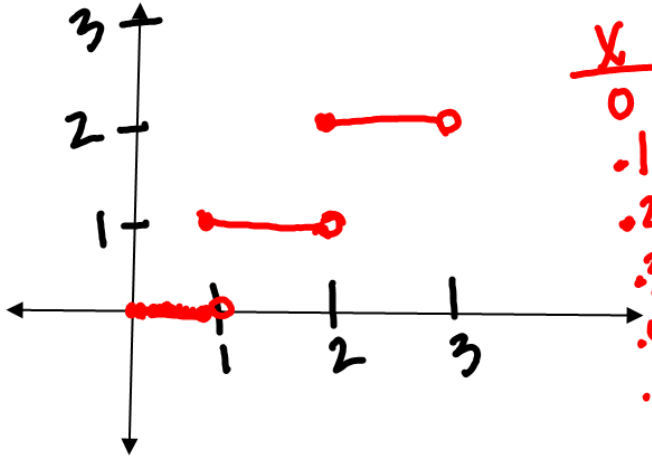
Greatest Integer Function

Integer $\leq$ # Rounding Down

$[[2.3]] = 2$

$[[-3.4]] = -4$

$f(x) = [[x]]$



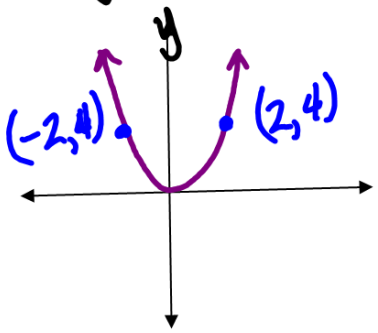
x	y
0	0
.1	0
.2	0
.3	0
.4	0
.9	0
1	1
1.1	1
1.2	1

Even $f(x) = f(-x)$

$f(x) = x^2$

$f(-x) = (-x)^2 = x^2$ Same

Symmetric about y-axis



$f(x) = x^3 + x^2 + 1$ Not even

$f(-x) = (-x)^3 + (-x)^2 + 1$

$f(-x) = -x^3 + x^2 + 1$

Odd $f(-x) = -f(x)$

$f(x) = x^3 + x^2 + 1$

$f(-x) = (-x)^3 + (-x)^2 + 1$

$= -x^3 + x^2 + 1$

$-f(x) = -x^3 - x^2 - 1$

Not Odd

$f(x) = x^3 + x$

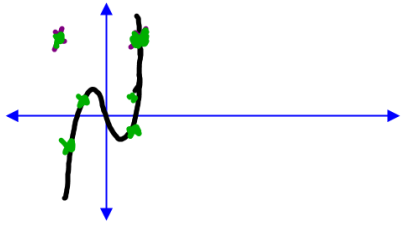
$f(-x) = (-x)^3 + -x$

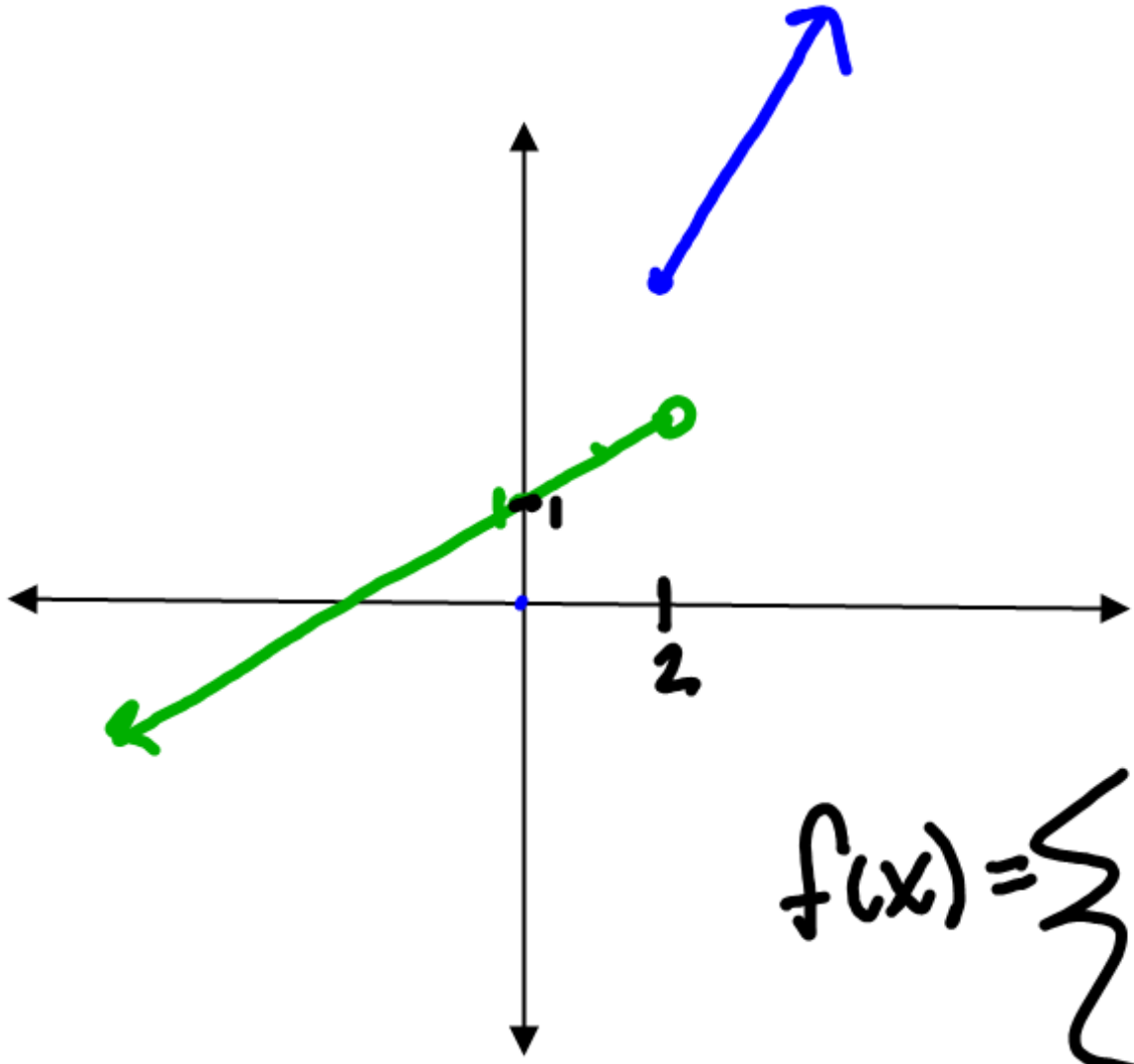
$= -x^3 - x$

$-f(x) = -x^3 - x$

Not Even

Same Odd





$$f(x) = \begin{cases} x+1 & x < 2 \\ 2x & x \geq 2 \end{cases}$$