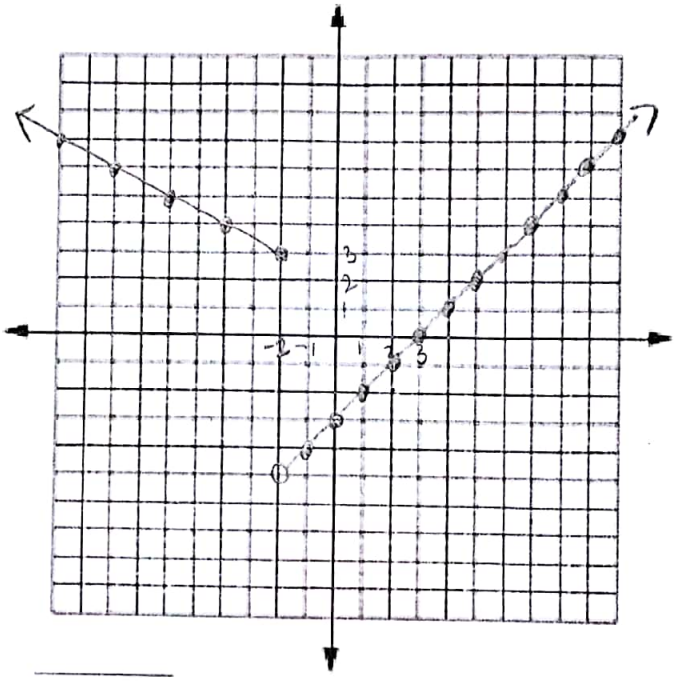
Piecewise Functions **Name** key

(1) **Sketch the graph of** $f(x) = \begin{cases} -\frac{1}{2}x + 2, & x \le -2 \\ x - 3, & x > -2 \end{cases}$

in class

x	$-\frac{1}{2}x+2$
-2	3
-4	4
-6	5



x	$x-3$
-2	-5
-1	-4
0	-3
1	-2
2	-1
3	0

Classwork/Homework 35, 36, 39, 40, 43 on graph paper

* make tables use graph paper

Graphing a Piecewise-Defined Function In Exercises 35–40, sketch the graph of the function.

35. $g(x) = \begin{cases} x + 6, & x \le -4 \\ \frac{1}{2}x - 4, & x > -4 \end{cases}$

36. $f(x) = \begin{cases} \sqrt{4 + x}, & x < 0 \\ \sqrt{4 - x}, & x \ge 0 \end{cases}$

(37) in class $f(x) = \begin{cases} 1 - (x - 1)^2, & x \le 2 \\ \sqrt{x - 2}, & x > 2 \end{cases}$

(38) in class $f(x) = \begin{cases} x^2 + 5, & x \le 1 \\ -x^2 + 4x + 3, & x > 1 \end{cases}$

39. $h(x) = \begin{cases} 4 - x^2, & x < -2 \\ 3 + x, & -2 \le x < 0 \\ x^2 + 1, & x \ge 0 \end{cases}$

40. $k(x) = \begin{cases} 2x + 1, & x \le -1 \\ 2x^2 - 1, & -1 < x \le 1 \\ 1 - x^2, & x > 1 \end{cases}$

37) $f(x) = \begin{cases} -(x-1)^2 + 1 & x \le 2 \\ \sqrt{x-2} & x > 2 \end{cases}$

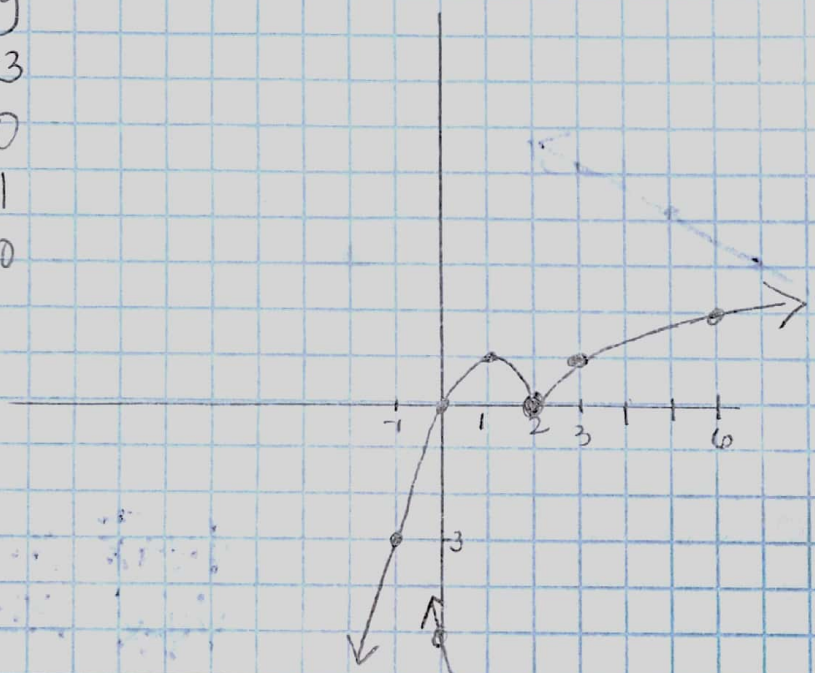
vertex $(1,1)$

$-(x-1)^2+1$

x	y
-1	-3
0	0
1	1
2	0

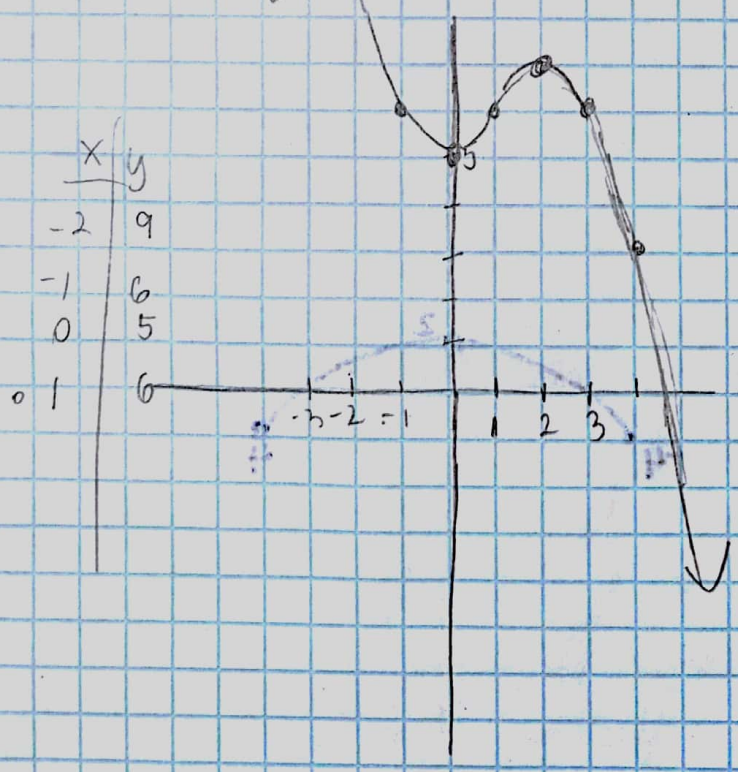
$\sqrt{x-2}$

x	y
2	0
3	1
4	$\sqrt{2}$
5	$\sqrt{3}$
6	2



38)

x	y
-2	9
-1	6
0	5
1	6



x	$y = -x^2 + 4x + 3$
0	3
1	6
2	7
3	6
4	3
5	-2

$-4+8+3$

$-9+12+3$

$-16+16+3$

$-25+20+3$

$-1(x^2-4x-3)$