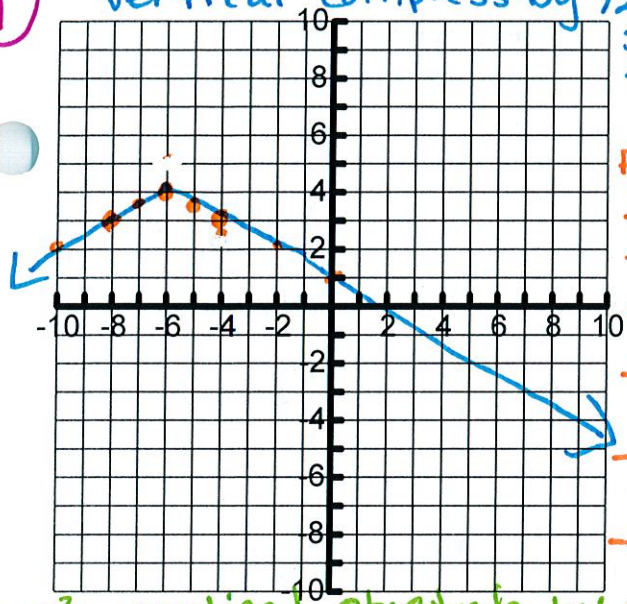
① reflect over x-axis
vertical compress by ½
shift left 6 + up 4



$a = -\frac{1}{2}$ (-6, 4)

Final x	y
-8	3
-7	3½
-6	4
-5	3½
-4	3

Characteristics

Vertex (-6, 4)

Domain ~~$-\infty < x < \infty$~~ $(-\infty, \infty)$ Range ~~$-\infty < f(x) \leq 4$~~ $(-\infty, 4]$

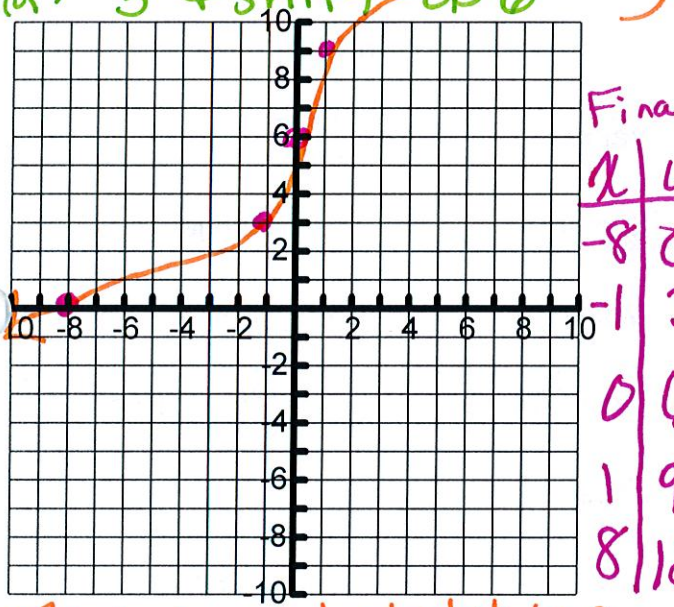
Max $y = 4$ Min ~~$-\infty$~~ None

Int of Inc $(-\infty, -6)$ Int of Dec $(-6, \infty)$

Ends $x \to -\infty, y \to -\infty$
$x \to \infty, y \to -\infty$

x-int (2, 0) + (-14, 0) y-int (0, 1)

② $a = 3$ (0, 4) vertical stretch by 3 + shift up 6



Final x	y
-8	0
-1	3
0	6
1	9
8	12

Characteristics

Vertex (0, 6)

Domain ~~$-\infty < x < \infty$~~ $(-\infty, \infty)$ Range ~~$-\infty < f(x) < \infty$~~ $(-\infty, \infty)$

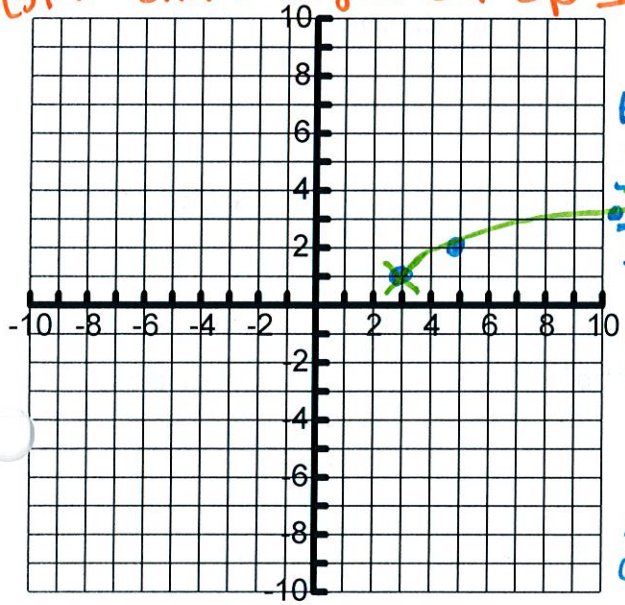
Max ~~∞~~ None Min ~~$-\infty$~~ None

Int of Inc $(-\infty, \infty)$ Int of Dec NA

Ends $x \to -\infty, y \to -\infty$
$x \to \infty, y \to \infty$

x-int (-8, 0) y-int (0, 6)

③ $y_b = 2$ (3, 1) horizontal stretch by 2
shift right 3 + up 1



Final x	y
3	1
5	2
11	3
21	4

Characteristics

Vertex (3, 1)

Domain ~~$3 \leq x < \infty$~~ $[3, \infty)$ Range ~~$1 \leq f(x) < \infty$~~ $[1, \infty)$

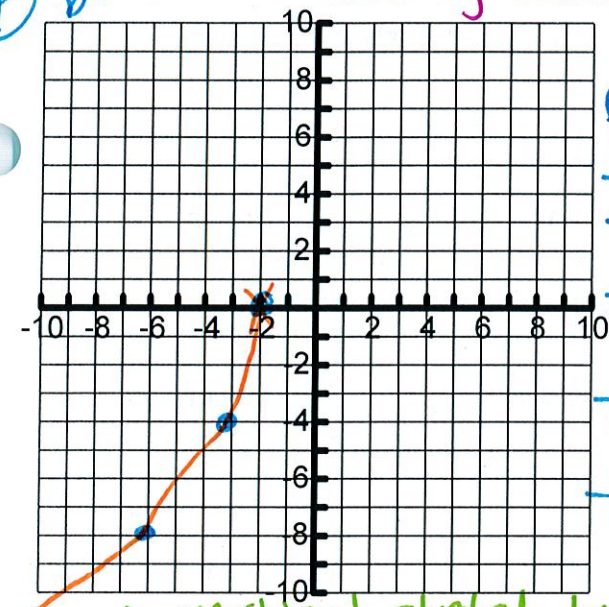
Max ~~∞~~ None Min $y = 1$

Int of Inc $[3, \infty)$ Int of Dec NA

Ends $x \to \infty, y \to \infty$

x-int NA y-int NA

(4) $a=-4$ $b=-1$ $(-2,0)$ reflect over x-axis and y-axis, vertical stretch by 4, shift left 2



Final	
X	y
-2	0
-3	-4
-6	-8
-11	-12

Characteristics

Vertex $(-2,0)$

Domain $-\infty < x \leq -2$ Range $-\infty < f(x) \leq 0$

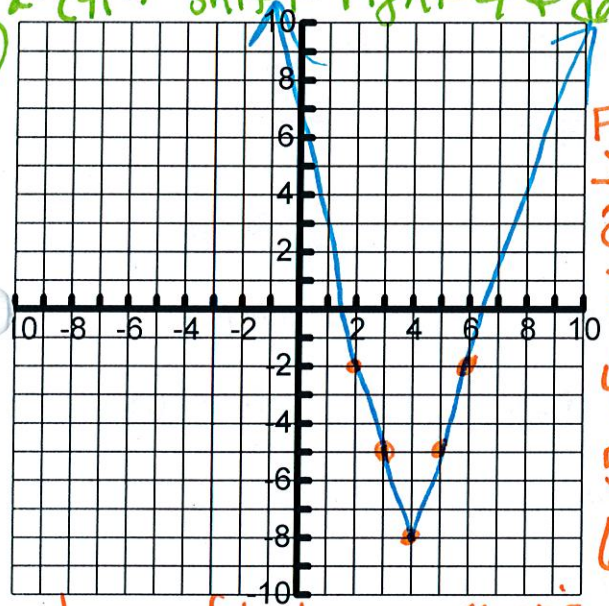
Max $y=0$ Min $-\infty$

Int of Inc $(-\infty,-2]$ Int of Dec NA

Ends $x \to -\infty, y \to -\infty$

x-int $(-2,0)$ y-int NA

(5) $a=3$ $(4,-8)$ vertical stretch by 3 shift right 4 & down 8



Final	
X	y
2	-2
3	-5
4	-8
5	-5
6	-2

Characteristics

Vertex $(4,-8)$

Domain ~~$-\infty < x < \infty$~~ $(-\infty,\infty)$ Range $-8 \leq f(x) < \infty$ $[-8,\infty)$

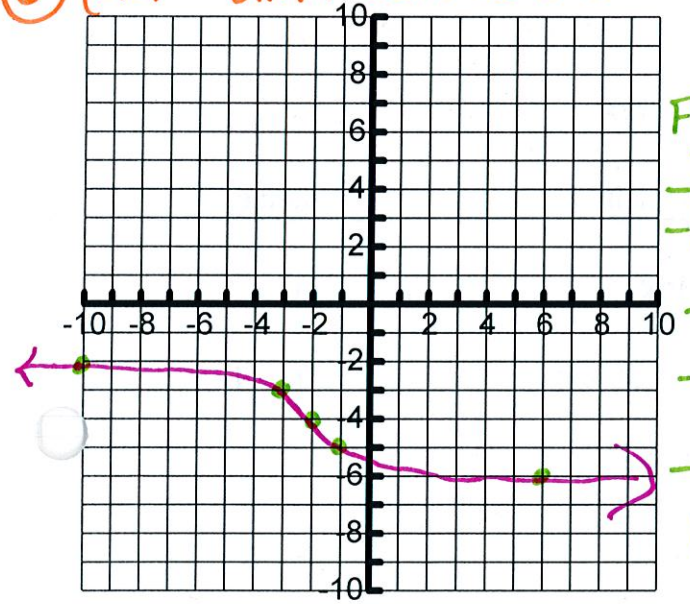
Max ~~∞~~ None Min $y=-8$

Int of Inc $(4,\infty)$ Int of Dec $(-\infty,4)$

Ends $x \to -\infty, y \to \infty$
$x \to \infty, y \to \infty$

x-int $(4/3,0)$ & $(\frac{20}{3},0)$ y-int $(0,4)$

(6) $a=-1$ $(-2,-4)$ reflect over x-axis shift left 2 & down 4



Final	
X	y
-10	-2
-3	-3
-2	-4
-1	-5
6	-6

Characteristics

Vertex $(-2,-4)$

Domain ~~$-\infty < x < \infty$~~ $(-\infty,\infty)$ Range ~~$-\infty < f(x) < \infty$~~ $(-\infty,\infty)$

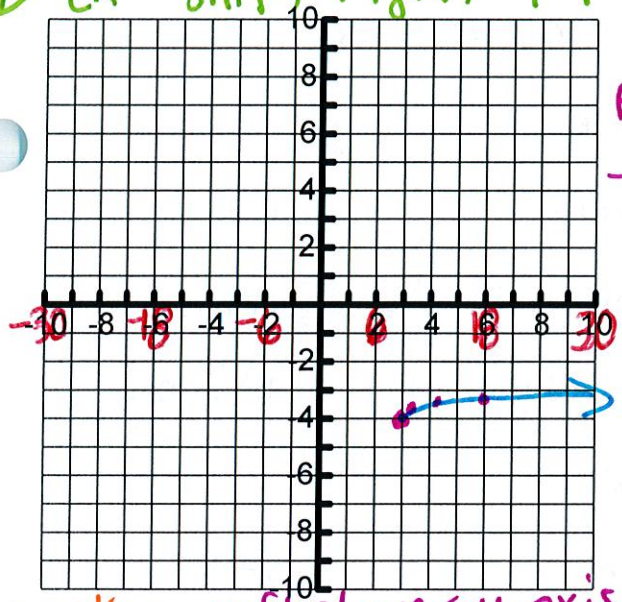
Max ~~∞~~ None Min ~~$-\infty$~~ None

Int of Inc NA Int of Dec $(-\infty,\infty)$

Ends $x \to -\infty, y \to \infty$
$x \to \infty, y \to -\infty$

x-int $(-66,0)$ y-int $(0,-5.26)$

(7) $a=\frac{1}{4}$ (9, -4) vertical compress by 1/4 shift right 9 + down 4



Final	
X	y
9	-4
10	$-3\frac{3}{4}$
13	$-3\frac{1}{2}$
18	$-3\frac{1}{4}$

Characteristics

Vertex (9, -4)

Domain ~~$-\infty < x < \infty$~~ $9 \le x < \infty$ $[9, \infty)$ Range ~~$-4 \le f(x) < \infty$~~ $[-4, \infty)$

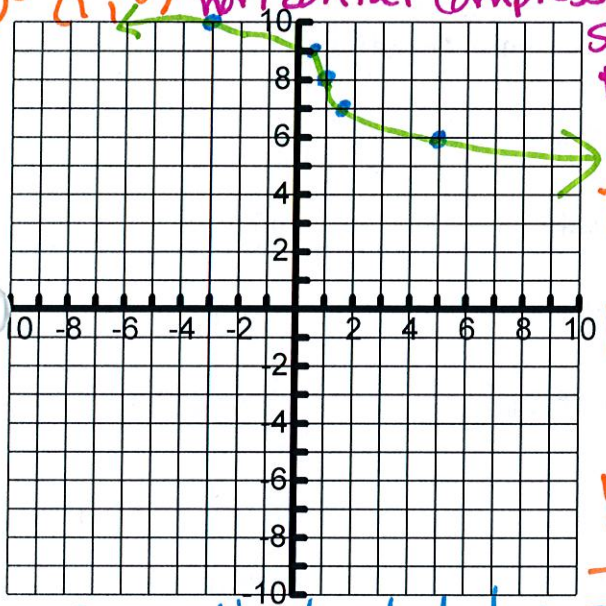
Max ~~∞~~ None Min $y = -4$

Int of Inc $[9, \infty)$ Int of Dec NA

Ends $x \to \infty, y \to \infty$

x-int (265, 0) y-int NA

(8) $\frac{1}{b} = -\frac{1}{2}$ (1, 8) reflect over y-axis horizontal compress by 1/2 shift right 1 + up 8



X	y
5	6
$1\frac{1}{2}$	7
1	8
$\frac{1}{2}$	9
-3	10

Characteristics

Vertex (1, 8)

Domain ~~$-\infty < x < \infty$~~ $(-\infty, \infty)$ Range ~~$-\infty < f(x) < \infty$~~ $(-\infty, \infty)$

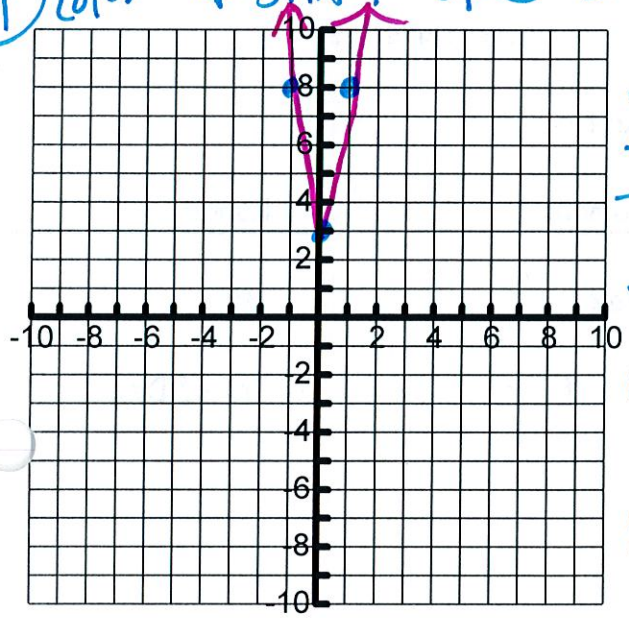
Max ~~∞~~ None Min ~~$-\infty$~~ None

Int of Inc NA Int of Dec $(-\infty, \infty)$

Ends $x \to -\infty, y \to \infty$
$x \to \infty, y \to -\infty$

x-int (257, 0) y-int (0, 9.26)

(9) $a = 5$ (0, 3) vertical stretch by 5 + shift up 3



X	y
-2	13
-1	8
0	3
1	8
2	13

Characteristics

Vertex (0, 3)

Domain ~~$-\infty < x < \infty$~~ $(-\infty, \infty)$ Range ~~$3 \le f(x) < \infty$~~ $[3, \infty)$

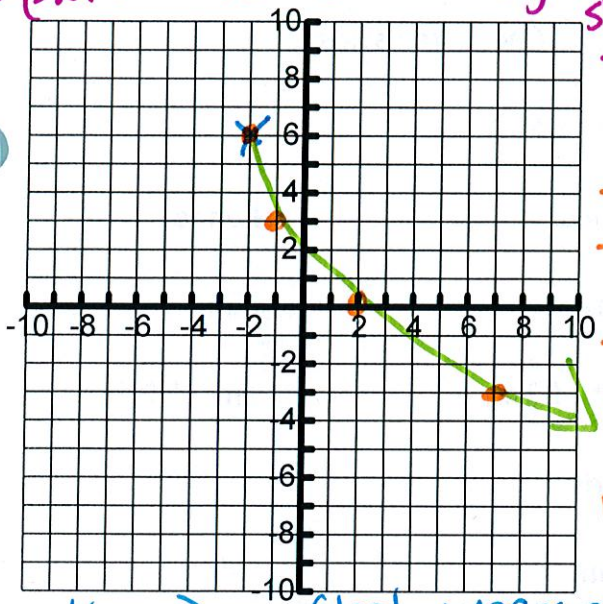
Max ~~∞~~ None Min $y = 3$

Int of Inc $(0, \infty)$ Int of Dec $(-\infty, 0)$

Ends $x \to -\infty, y \to \infty$
$x \to \infty, y \to \infty$

x-int NA y-int (0, 3)

(10) $a=-3$ reflect over x-axis
$(-2,6)$ vertical stretch by 3
shift left 2 + up 6



x	y
-2	6
-1	3
2	0
7	-3

Characteristics

Vertex $(-2,6)$

Domain ~~$-\infty < x < \infty$~~ $[-2,\infty)$ Range ~~$-\infty < f(x) \leq 6$~~ $(-\infty, 6]$

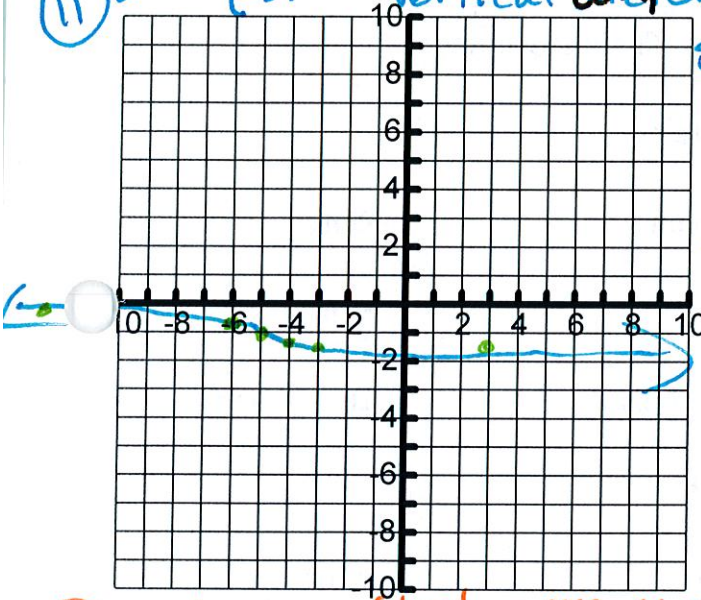
Max $y=6$ Min ~~$-\infty$~~ None

Int of Inc NA Int of Dec $[-2,\infty)$

Ends $x \to \infty, y \to -\infty$

x-int $(2,0)$ y-int $(0, 1.76)$

(11) $a=-1/4$ $(-5,-1)$ reflect over x-axis, vertical ~~stretch~~ compress by $1/4$
shift left 5 & down 1



x	y
-13	-1/2
-6	-3/4
-5	-1
-4	-1 1/4
3	-1 1/2

Characteristics

Vertex $(-5,-1)$

Domain ~~$-\infty < x < \infty$~~ $(-\infty,\infty)$ Range ~~$-\infty < f(x) < \infty$~~ $(-\infty,\infty)$

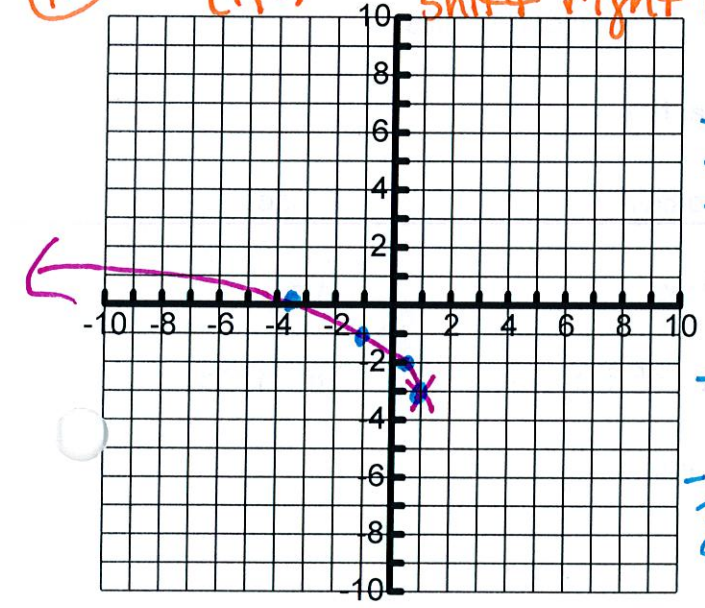
Max ~~∞~~ None Min ~~$-\infty$~~ None

Int of Inc NA Int of Dec $(-\infty,\infty)$

Ends $x \to -\infty, y \to \infty$
$x \to \infty, y \to -\infty$

x-int $(-69,0)$ y-int $(0, -1.43)$

(12) $\frac{1}{b}=\frac{-1}{2}$ reflect over y-axis
$(1,-3)$ horizontal compress by $1/2$
shift right 1 & down 3



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

Characteristics

Vertex $(1,-3)$

Domain ~~$-\infty < x \leq 1$~~ $(-\infty, 1]$ Range ~~$-3 \leq f(x) < \infty$~~ $[-3,\infty)$

Max ~~∞~~ None Min $y=-3$

Int of Inc NA Int of Dec $(-\infty, 1]$

Ends $x \to -\infty, y \to \infty$

x-int $(-3.5, 0)$ y-int $(0, -1.59)$