

section 3.6

3.6 1

338) a) yes (pass vertical line test)

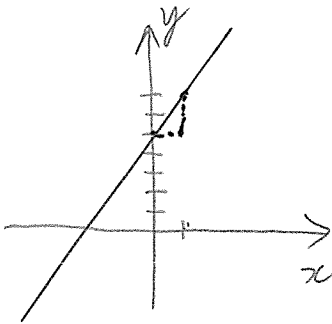
b) no (fail vertical line test)

340) a) no (fail vertical line test)

b) no (fail vertical line test)

342) $f(x) = 2x + 5$

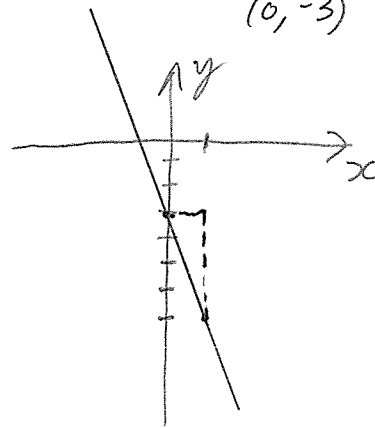
a) $m = 2 = \frac{2}{1}$ $b = 5$
(0, 5)



b) domain: $(-\infty, \infty)$
range: $(-\infty, \infty)$

344) $f(x) = -4x - 3$

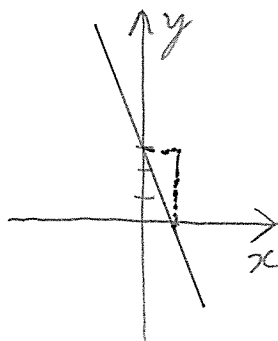
a) $m = -4 = \frac{-4}{1}$ $b = -3$
(0, -3)



b) domain: $(-\infty, \infty)$
range: $(-\infty, \infty)$

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

a) $m = -3 = \frac{-3}{1}$ $b = 3$
(0, 3)

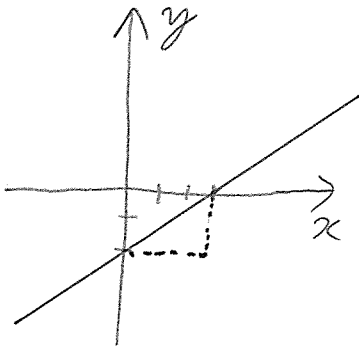


b) domain: $(-\infty, \infty)$
range: $(-\infty, \infty)$

$$348) f(x) = \frac{2}{3}x - 2$$

$$a) m = \frac{2}{3} \quad b = -2$$

$(0, -2)$



$$b) \text{domain: } (-\infty, \infty)$$

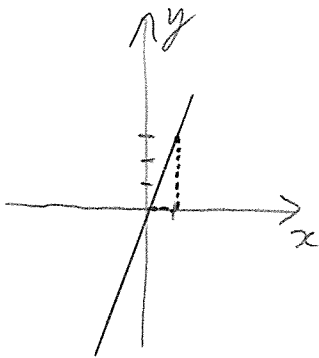
$$\text{range: } (-\infty, \infty)$$

$$354) f(x) = 3x$$

$$= 3x + 0$$

$$a) m = 3 = \frac{3}{1} \quad b = 0$$

$(0, 0)$

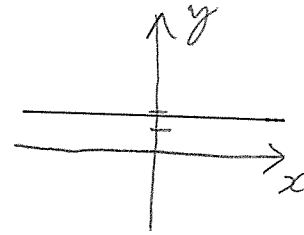


$$b) \text{domain: } (-\infty, \infty)$$

$$\text{range: } (-\infty, \infty)$$

$$350) f(x) = 2$$

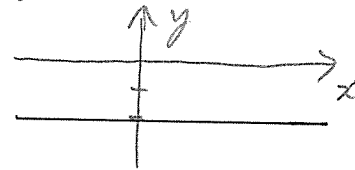
a)



$$b) \text{domain: } (-\infty, \infty) \quad \text{range: } \{2\}$$

$$352) f(x) = -2$$

a)



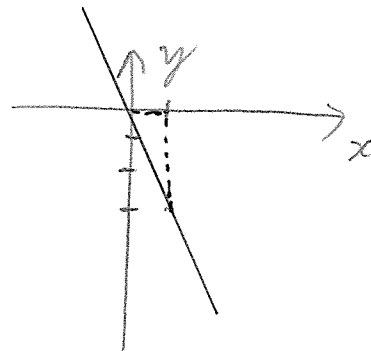
$$b) \text{domain: } (-\infty, \infty) \quad \text{range: } \{-2\}$$

$$356) f(x) = -3x$$

$$= -3x + 0$$

$$a) m = -3 = \frac{-3}{1} \quad b = 0$$

$(0, 0)$



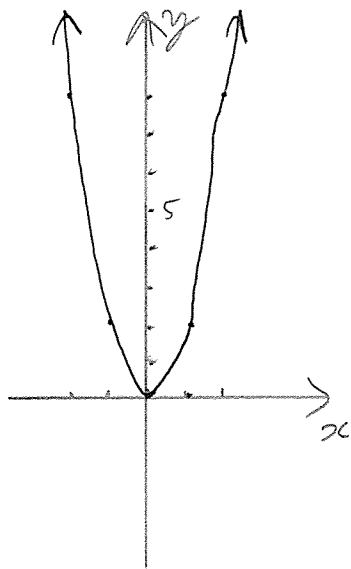
$$b) \text{domain: } (-\infty, \infty)$$

$$\text{range: } (-\infty, \infty)$$

358) $f(x) = 2x^2$

a)

x	y
2	8
1	2
0	0
-1	2
-2	8



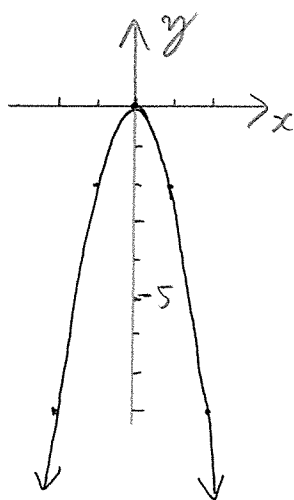
b) domain: $(-\infty, \infty)$

range: $[0, \infty)$

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

a)

x	y
2	-8
1	-2
0	0
-1	-2
-2	-8



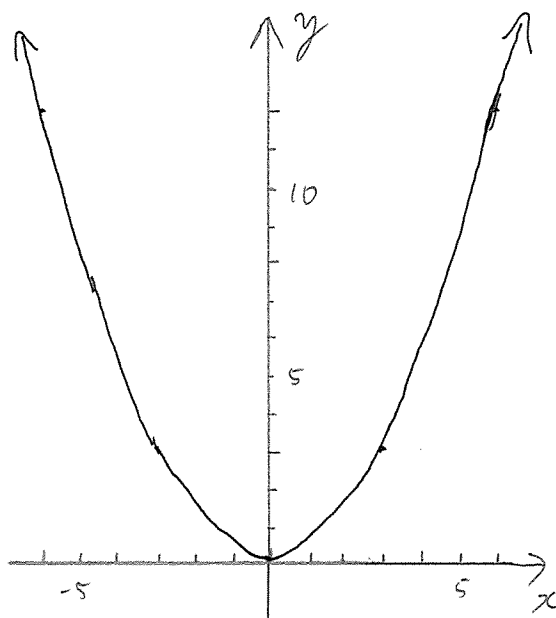
b) domain: $(-\infty, \infty)$

range: $(-\infty, 0]$

362) $f(x) = \frac{1}{3}x^2$

a)

x	y
6	$\frac{1}{3}(6)^2 = \frac{1}{3}(6)(6) = 12$
3	$\frac{1}{3}(3)^2 = \frac{1}{3}(3)(3) = 3$
0	0
-3	$\frac{1}{3}(-3)^2 = \frac{1}{3}(-3)(-3) = 3$
-6	$\frac{1}{3}(-6)^2 = \frac{1}{3}(-6)(-6) = 12$



b) domain: $(-\infty, \infty)$

range: $[0, \infty)$

for certain graphing exercises in this section
it is best to use Translation of Graphs
(Horizontal and Vertical shifts) because
this technique is needed for section 9.6 and future courses.

a general graph $y = a f(x-h) + k$

has Horizontal shift: h { positive: right, negative left }

Vertical shift: k { positive: up, negative: down }

and this graph will have same shape as $y = a f(x)$.

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

a) $f(x) = (x - (0))^2 + (1)$

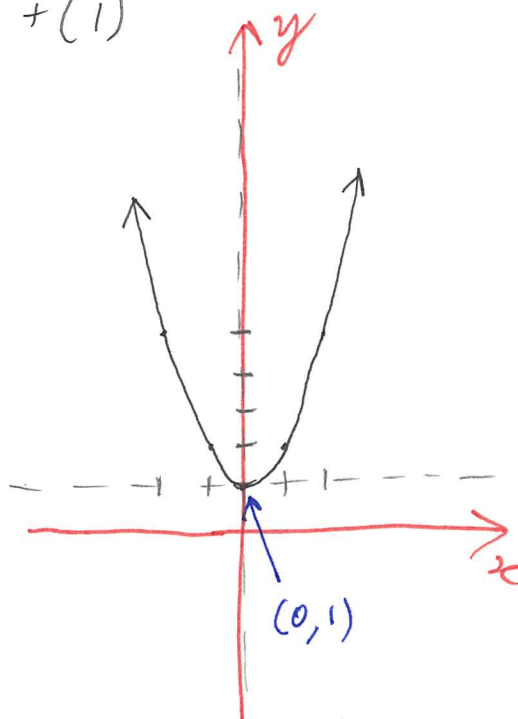
H-shift: 0

V-shift: +1

like

$$y = x^2$$

x	y
2	4
1	1
0	0
-1	1
-2	4



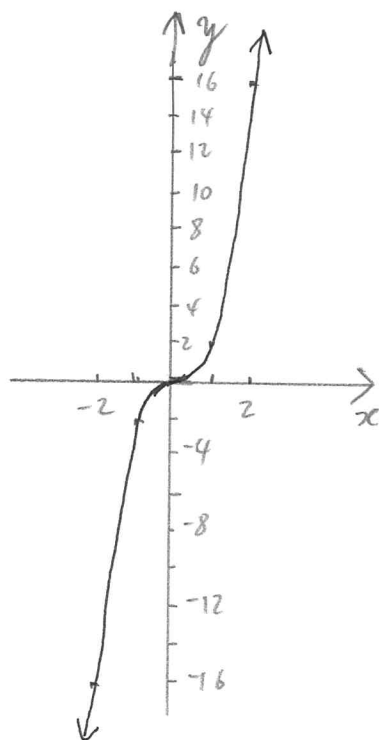
b) domain: $(-\infty, \infty)$

range: $[1, \infty)$

366) $f(x) = 2x^3$

a)

x	y
2	16
1	2
0	0
-1	-2
-2	-16



b) domain: $(-\infty, \infty)$

range: $(-\infty, \infty)$

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

$$f(x) = (x - (0))^2 + (-2)$$

a)

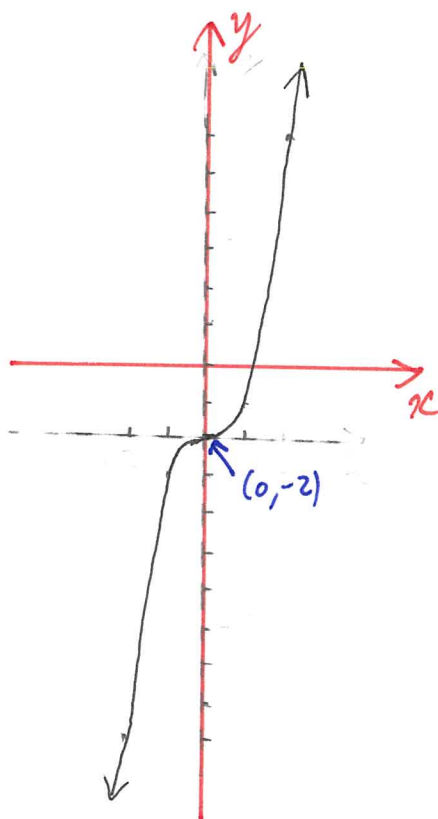
H-shift: 0

V-shift: -2

like

$$y = x^3$$

x	y
2	8
1	1
0	0
-1	-1
-2	-8



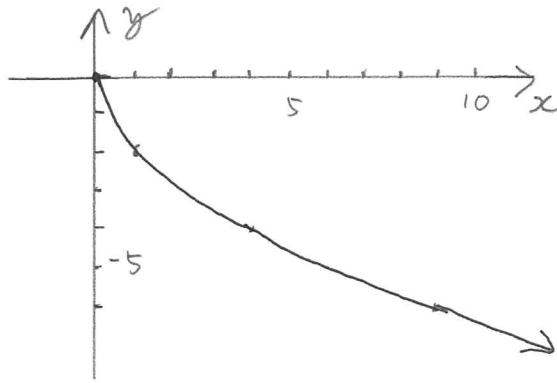
b) domain: $(-\infty, \infty)$

range: $(-\infty, \infty)$

370) $f(x) = -2\sqrt{x}$

a)

x	y
0	0
1	-2
4	-4
9	-6



b) domain: $[0, \infty)$

range: $(-\infty, 0]$

372) $f(x) = \sqrt{x+1}$

a) $f(x) = \sqrt{x - (-1)} + (0)$

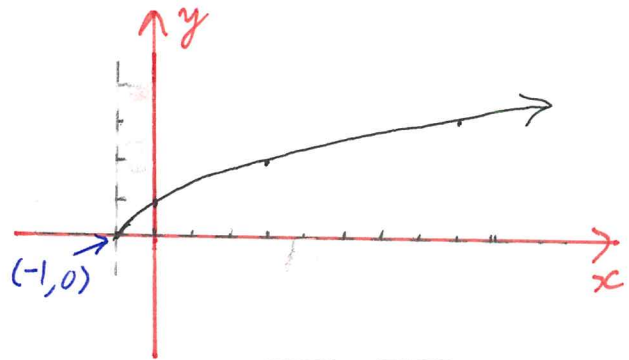
H-shift: -1

V-shift: 0

like

$y = \sqrt{x}$

x	y
0	0
1	1
4	2
9	3



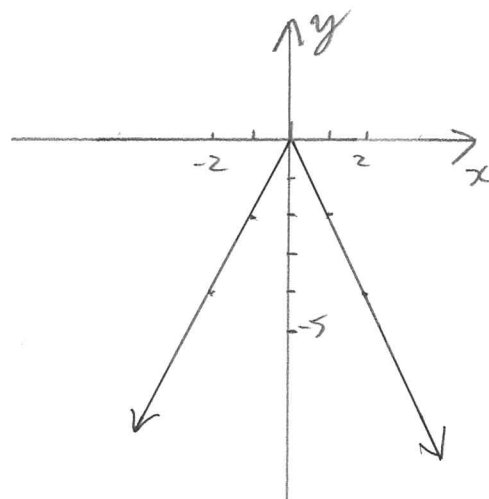
b) domain: $[-1, \infty)$

range: $[0, \infty)$

374) $f(x) = -2/|x|$

a)

x	y
2	-4
1	-2
0	0
-1	-2
-2	-4



b) domain: $(-\infty, \infty)$

range: $(-\infty, 0]$

$$376) f(x) = |x| - 1$$

$$f(x) = |x - (0)| + (-1)$$

$$b) \text{ domain: } (-\infty, \infty)$$

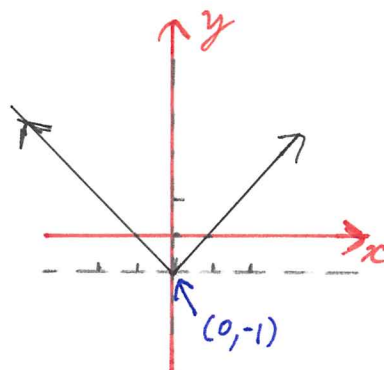
$$\text{range: } [-1, \infty)$$

$$a) \text{ H-shift: } 0$$

$$\text{V-shift: } -1$$

$$\text{like } y = |x|$$

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



for 377-386 look at graph in on-line text

$$378) \text{ domain: } [-3, \infty) \quad \text{range: } [0, \infty)$$

$$380) \text{ domain: } (-\infty, \infty) \quad \text{range: } [-1, \infty)$$

$$382) \text{ domain: } [-3, 3] \quad \text{range: } [3, 6]$$

$$384) a) f(0) = -1$$

$$b) f(\pi) = 1$$

$$c) f(-\pi) = 1$$

$$d) x = -\frac{3\pi}{2}, x = -\frac{\pi}{2}, x = \frac{\pi}{2}, x = \frac{3\pi}{2}$$

e) same as part d

f) same as part a

$$g) \text{ domain: } (-\infty, \infty)$$

$$h) \text{ range: } [-1, 1]$$

$$386) a) f(0) = 4$$

$$b) x = -4, x = 4$$

c) same as part b

d) same as part a

$$e) \text{ domain: } [-4, 4]$$

$$f) \text{ range: } [0, 4]$$