Ch. 1 Review Exercises

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

Shift $y = x^2$ left 2

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

Shift $y = |x|$ right 2

3) (i) $f(x) = e^x - 1$

shift $y = e^x$ down 1

4) (h) $f(x) = -\sin x$

$y = \sin x$ reflected over x-axis

5) (b) $f(x) = x^2 + 1$

Shift $y = x^2$ up 1

6) (j) $f(x) = 1 + \cos x$

Shift $y = \cos x$ up 1

7) (g) $f(x) = |x+2|$

Shift $y = |x|$ left 2

8) (c) $f(x) = (x-2)^2$

Shift $y = x^2$ right 2

9) (a) $f(x) = x^2 - 1$

shift $y = x^2$ down 1

10) (e) $f(x) = \frac{x-1}{2}$

eqn of line

V. ~~stretch~~ Shrink $\frac{1}{2}$

shift down $\frac{1}{2}$

11) a) D: $(-\infty, \infty)$

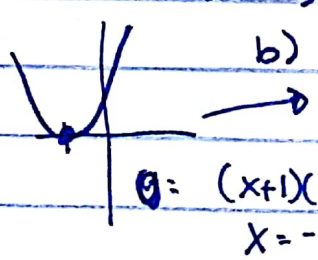
b) R: $(-\infty, \infty)$

12) a) D: $(-\infty, \infty)$

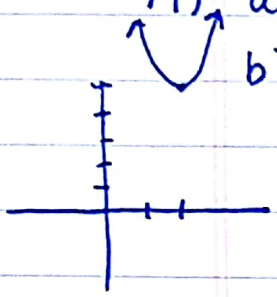
b) R: $(-\infty, \infty)$

13) a) D: $(-\infty, \infty)$

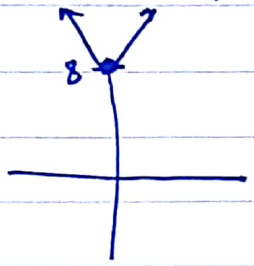
b) R: $[0, \infty)$



14) a) D: $(-\infty, \infty)$
b) R: $[5, \infty)$



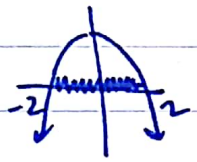
15) a) D: $(-\infty, \infty)$
b) R: $[8, \infty)$

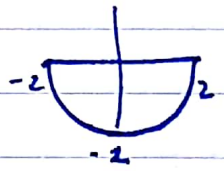


16) a) D $\quad 4 - x^2 \geq 0 \quad$ D: $[-2, 2]$

$(2-x)(2+x)$

$x = 2 \quad x = -2$ $\quad$ b) R: $[-2, 0]$





17) a) $f(x) = \dfrac{x}{x(x-2)}$ $\quad x \neq 0 \quad x \neq 2$ $\quad$ V.A. $x = 0$, $x = 2$

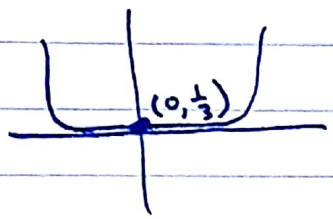
D: $(-\infty, 0) \cup (0, 2) \cup (2, \infty)$

H.A. $y = 0$

b) R: $(-\infty, 0) \cup (0, \infty)$

18) a) $9 - x^2 > 0$ $\quad$ D: $(-3, 3)$

Graph $y = \dfrac{1}{\sqrt{9-x^2}}$



b) R: $\left[\frac{1}{3}, \infty\right)$

21) $y = \frac{5}{x(x-5)}$

a) V.A. $x = 0$
$x = 5$

b) H.A. $y = 0$

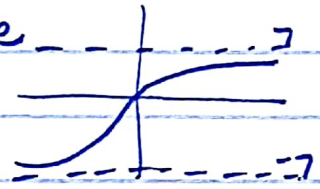
22) $y = \frac{3x}{x-4}$

a) V.A. $x = 4$

b) H.A. $y = 3$

23) $y = \frac{7x}{\sqrt{x^2+10}}$

a) None

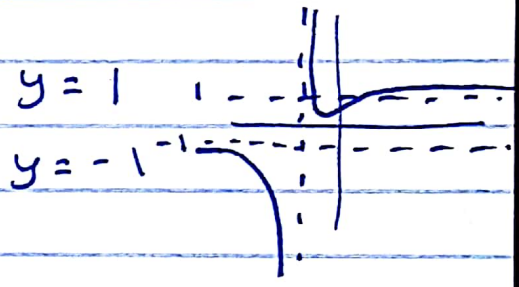


b) $y = 7$
$y = -7$

24) $y = \frac{|x|}{x+1}$

a) $x = -1$

b) $y = 1$
$y = -1$

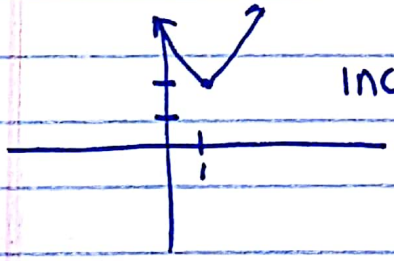


25) $y = \frac{1}{6}x^3$

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

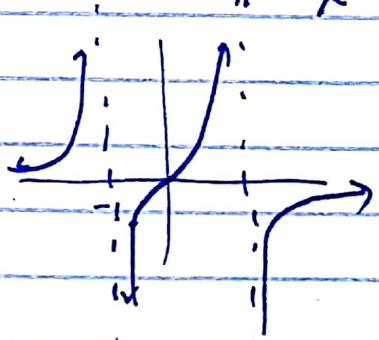
26) $y = 2 + |x-1|$

$y = |x|$ rt 1 up 2



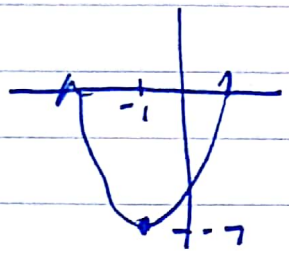
increasing $[1, \infty)$

27) $y = \frac{x}{1-x^2}$



increasing $(-\infty, -1)$
$(-1, 1)$
$(1, \infty)$

33) $y = (x+1)^2 - 7$



relative min.
$(-1, -7)$

37) $y = 3x^2 - 4|x|$

abs. value

$f(-x) = 3(-x)^2 - 4|-x|$

$3x^2 - 4x$

$f(-x) = 3x^2 - 4x$

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

MUST SHOW ALGEBRAIC WORK

see symmetry WS (Back)

If $f(-x) = f(x)$ EVEN

If $f(-x) = -f(x)$ ODD

41) $y = 2x + 3$

$y - 3 = 2x$

$\frac{y-3}{2} = x$

$\boxed{f^{-1}(y) = \frac{y-3}{2}}$

42) $y^3 = \sqrt[3]{x-8}^3$

$y^3 = x - 8$

$y^3 + 8 = x$

$\boxed{f^{-1}(y) = y^3 + 8}$

43) $y = \frac{2}{x}$

$xy = 2$

$x = \frac{2}{y}$

$\boxed{f^{-1}(y) = \frac{2}{y}}$

44) $y = \frac{6}{x+4}$

$y(x+4) = 6$

$xy + 4y = 6$

$xy = 6 - 4y$

$x = \frac{6-4y}{y}$

$\boxed{f^{-1}(y) = \frac{6-4y}{y}}$

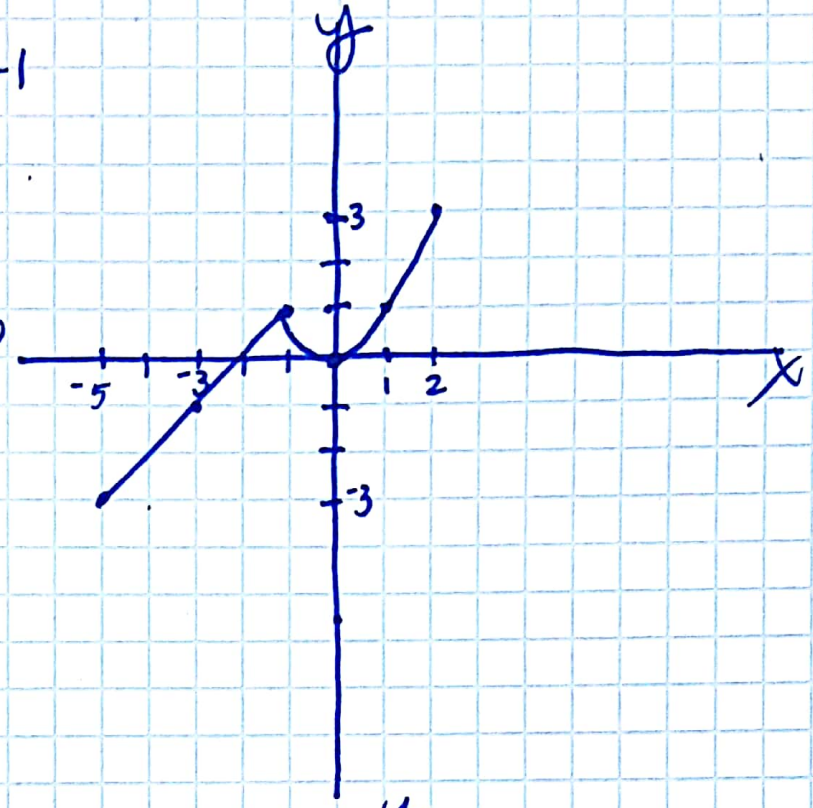
45) Parent fnc

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

→

x	y-1
-5	-3
-3	-1
-1	1
0	0
1	1
2	3

SHIFT DOWN 1



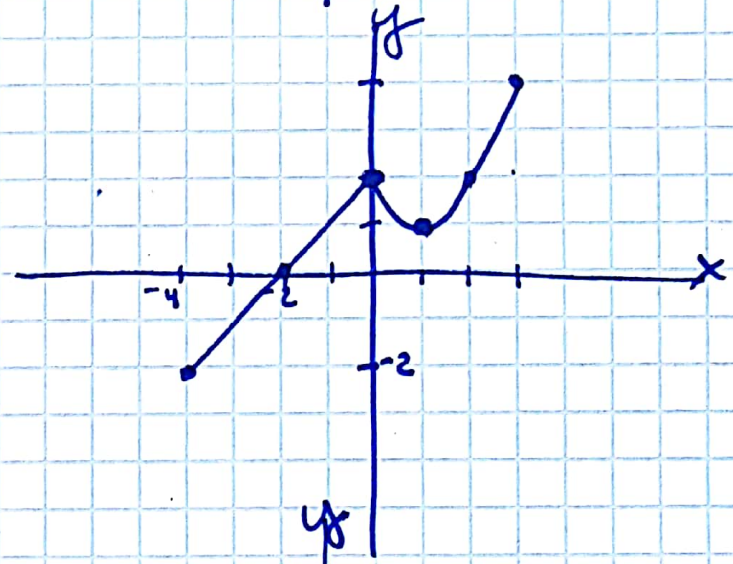
46)

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

→

x+1	y
-4	-2
-2	0
0	2
1	1
2	2
3	4

SHIFT RT 1



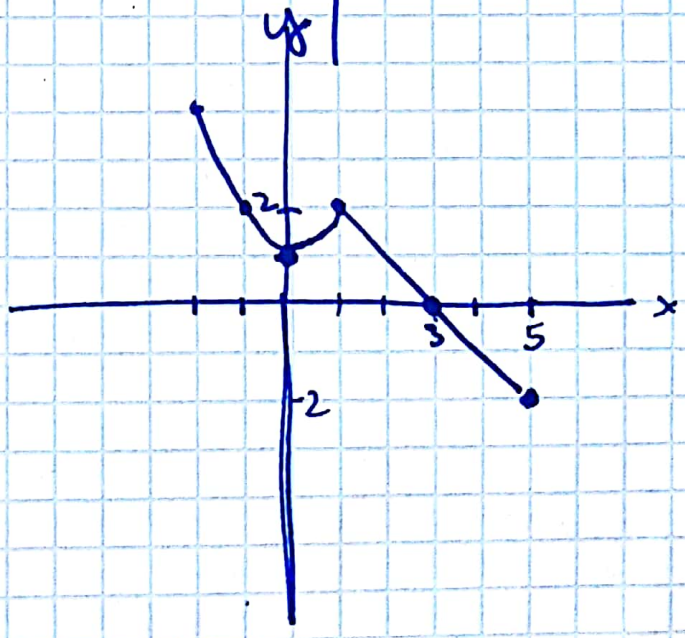
47)

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

→

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

reflect over y axis



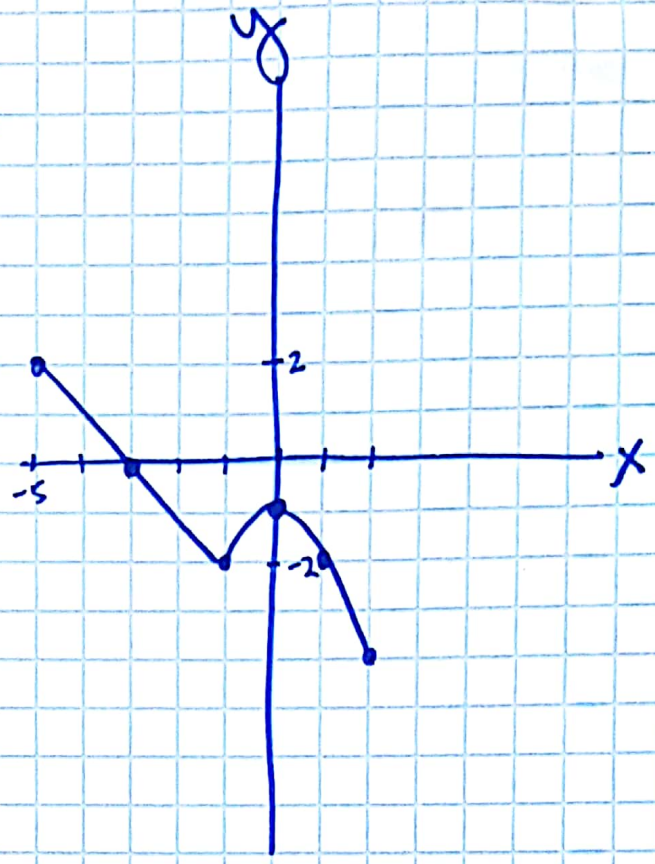
48)

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

→

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

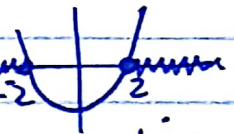
reflect over x-axis



53) $(f \circ g)(x) = f(g(x)) = f(x^2-4) = \sqrt{x^2-4}$

$(f \circ g)(x) = \sqrt{x^2-4}$

$x^2-4 \geq 0$



D: $(-\infty, -2] \cup [2, \infty)$ ← find this by looking at where graph is above x-axis.

54) $(g \circ f)(x) = g(f(x)) = g(\sqrt{x}) =$

$(\sqrt{x})^2 - 4$

$(g \circ f)(x) = x - 4$

Domain $[0, \infty)$ because $\sqrt{x}$ was substituted in

- Additional practice → redo HW problems similar to these review questions!!