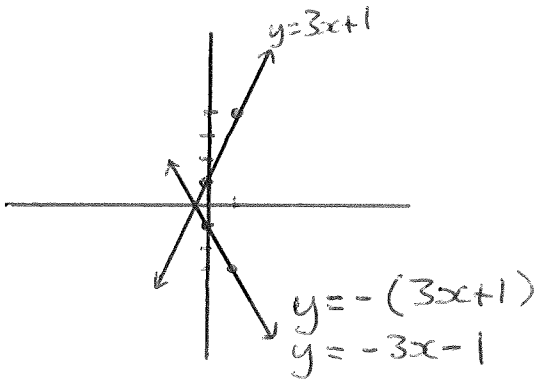
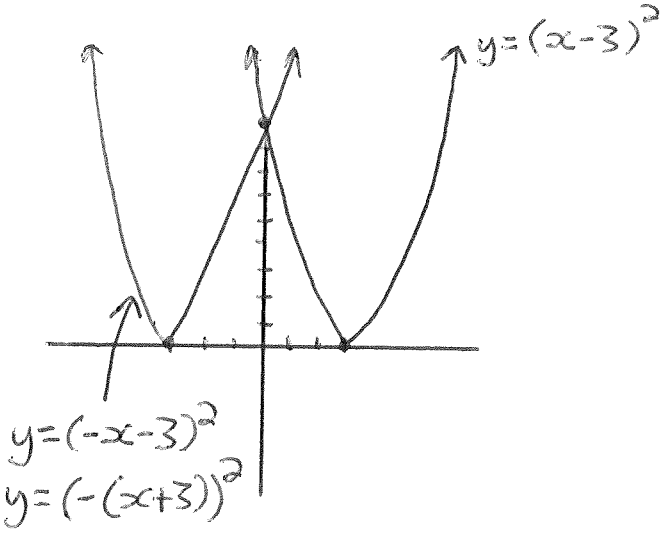
Ch 1 Review

KEY

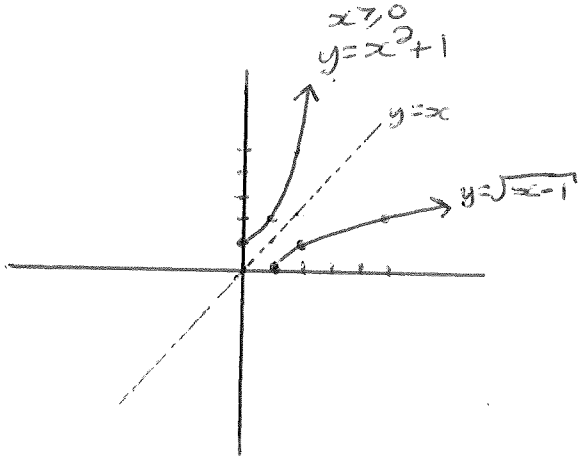
(1)



(2)



(3)



$x = \sqrt{y-1}$

$x^2 = y-1$

$x^2+1 = y$

D: $x \geq 0$

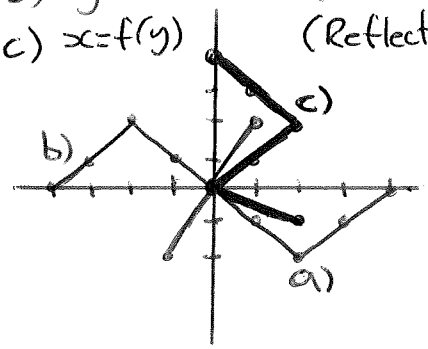
R: $y \geq 1$

Ch 1 Review cont...

(4) a) $y = -f(x)$ (Reflection across x-axis)

b) $y = f(-x)$ (Reflection across y-axis)

c) $x = f(y)$ (Reflection across $y = x$)



(5) $f(x) = x^2 - 4$ →

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

C - vert. exp. $\times 3$, horiz. compr. $\times \frac{1}{2}$

R - reflected in x + y axis

T - left 3, down 1

$(x, y) \rightarrow (-\frac{1}{2}x, -3y) \rightarrow (-\frac{1}{2}x - 3, -3y - 1)$

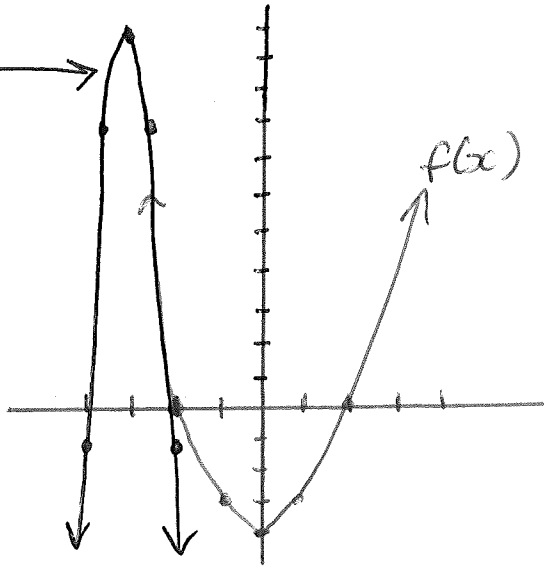
$f(x)$

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

→

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

x	y
-2	-1
-2.5	8
-3	11
-3.5	8
-4	-1



(6) $f(x)=\sqrt{x} \rightarrow y=\frac{1}{2}f\left(-\frac{1}{2}(x-4)\right)+1$

C - vert. comp. $\times\frac{1}{2}$, horiz exp. $\times 2$

R - reflected in y-axis

T - right 4, up 1

$(x, y) \rightarrow (-2x, \frac{1}{2}y) \rightarrow (-2x+4, \frac{1}{2}y+1)$

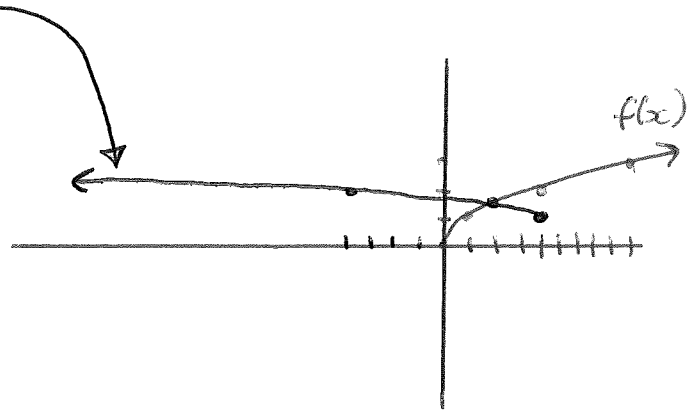
$f(x)$

x	y
0	0
1	1
4	2
9	3

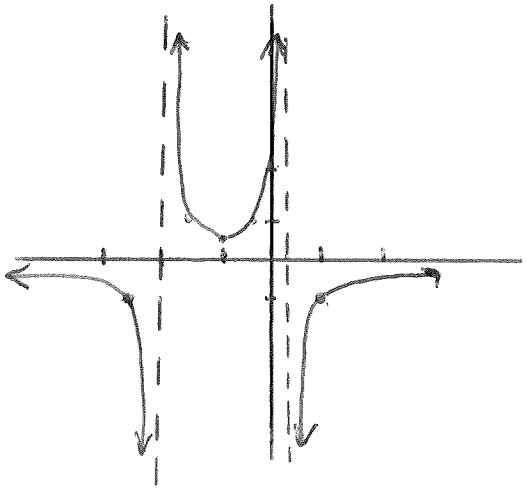
$\rightarrow$

$y=\frac{1}{2}f\left(-\frac{1}{2}(x-4)\right)+1$

x	y
4	1
2	1.5
-4	2
-14	2.5



(7)



(8) $y = -f(2(x+2)) - 2$

C - horiz compr. $\times \frac{1}{2}$
R - reflected in x-axis
T - left 2, down 2

$(a, b) \to \left(\frac{1}{2}a - 2, -b - 2\right)$

(9) $y = \frac{1}{2|f(x+1)|}$

$(x, y) \to \left(x - 1, \frac{1}{2|y|}\right)$

$(+1, -4) \to \left(0, \frac{1}{8}\right)$

(10) $y = -3|f(x-1)| + 1$

C - vert. expanded $\times 3$
R - reflected in x-axis
T - right 1, up 1

$(x, y) \to (x+1, -3|y|+1)$

$(-3, -6) \to (-2, -17)$

(11) $f(x) = x^3 - 8$ same as $y = x^3 - 8$

Inverse: $x = y^3 - 8$

$x + 8 = y^3$

$y = \sqrt[3]{x+8}$

$f^{-1}(x) = \sqrt[3]{x+8}$