1a. $f(x) = x - 5$

$f^{-1}(x) = \dfrac{x+5}{1}$

b. $g(t) = 2t - 7$

$g^{-1}(t) = \dfrac{t+7}{2}$

c $y(x) = (2x)^3$

$y^{-1}(x) = \sqrt[3]{\dfrac{x}{2}} = \left(\dfrac{x}{2}\right)^{\frac{1}{3}}$

d. $h(t) = \dfrac{t-2}{3}$

$h^{-1}(t) = 3(t+2)$

2. $f(t) = 3t,\ g(t) = t+2,\ h(t) = t^3$

a. $f(g(t)) = f(t+2) = 3(t+2)$

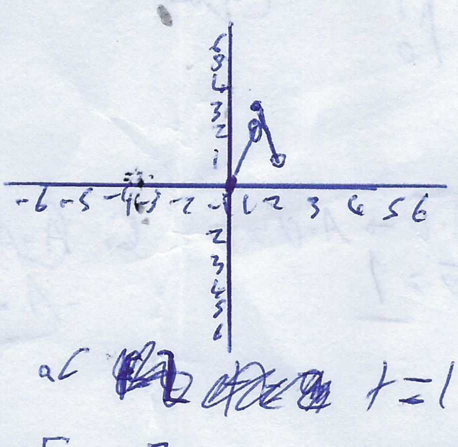
b $f(g(x)) = f(y+2) = 3(y+2)$

c. $f(h(t)) = f(t^3) = 3(t^3)$

d. $(f(g(h(t)))) = f(g(t^3)) = f(t^3+2) = 3(t^3+2)$

e. $(f(f(y))) = (f(3(y))) = 3(3(y)) = 9(y) = 9y$

3. $f(t) = \begin{cases} 2t, & 0 \le t < 1 \\ 4-t, & 1 \le t < 2 \end{cases}$

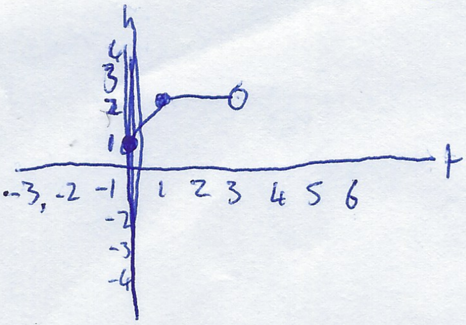


a. it is neither a PWCF or a CTF

b. there are Discontinuities at ~~...~~ $t=1$

c. ~~...~~ Range $[0, 2]$

4. $h(t) = \begin{cases} t+1, & 0 \leq t \leq 1 \\ 2, & 1 \leq t < 3 \end{cases}$ h on $[-3, 6]$



no discontinuities between $[-3, 6]$

5. a. $-2x > 7$ is true if ~~x~~ $x \leq -4$

b. $3v - 7 \leq 2$

$\quad -2 \quad -2$

$3v - 9 \leq 0$

$\quad +9 \quad +9$

$\frac{3v}{3} \leq \frac{9}{3}$

~~[illegible]~~ $v \leq 9$

c. $\frac{4-2w}{3} < 2$ $\times 3$ $= 4 - 2w < 6$ $-4 \; -4$ $= -2w < 2$ $\div -2$ $= \underline{w \leq -4}$

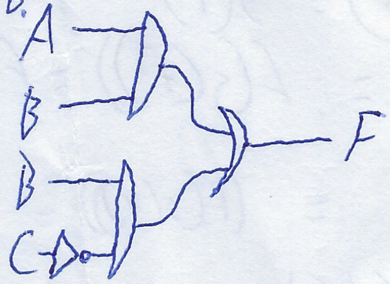
d. $(x-2)^2 < 1 = x - 2 < 1^{\frac{1}{2}} = 1$ $+2 \; +2$ $= x <$ ~~[illegible]~~ 3 if $x < 3$ then

6. $(A \cdot B) + (B \cdot \overline{C})$

a.

A	B	C	$\overline{C}$	$A \cdot B$	$B \cdot \overline{C}$	F
1	1	1	0	1	0	1
1	0	1	0	0	0	0
1	1	0	1	1	1	1
1	0	0	1	0	0	0
0	1	1	0	0	0	0
0	0	1	0	0	0	0
0	1	0	1	0	1	1
0	0	0	1	0	0	0

b.



7. a. $(A \cdot A) + \overline{A} = 1$

$= A + \overline{A} = \underline{1}$

b. $\overline{A \cdot 0} + A \cdot 0 = 0$

$= \overline{0} = \underline{1}$

c. $(A + A) \cdot (B + B)$

$= \underline{A \cdot B}$

d. $(A \cdot B + A \cdot \overline{B}) + B \cdot C + A \cdot B \cdot C$

$= A(B + \overline{B})$ | $= B \cdot C + A \cdot B \cdot C$

$= A(1)$ | $= A + (B \cdot C)$

$= A$

$= A + A + (B \cdot C)$

$= A + (B \cdot C)$

8. $(A \cdot B) + (\overline{A} \cdot \overline{B})$

~~$(A \cdot B) + (A + B)$~~

~~$\overline{AB} \cdot \overline{AB}$~~

$\overline{\overline{A \cdot B} \cdot \overline{\overline{A}\,\overline{B}}}$

~~8~~ 9.

A	B	C	X
1	1	1	1
1	1	0	1
1	0	1	1
1	0	0	1
0	1	1	1
0	1	0	0
0	0	1	0
0	0	0	0

ABC
$+AB\bar{C}$
$+A\bar{B}C$
$+A\bar{B}\bar{C}$
$+\bar{A}BC$

$$DNF = ABC + AB\bar{C} + A\bar{B}C + A\bar{B}\bar{C} + \bar{A}BC$$

$$= A \cdot B \cdot (C + \bar{C})$$
$$= AB1$$
$$= AB$$

$$AB + A\bar{B}C + A\bar{B}\bar{C} + \bar{A}BC$$

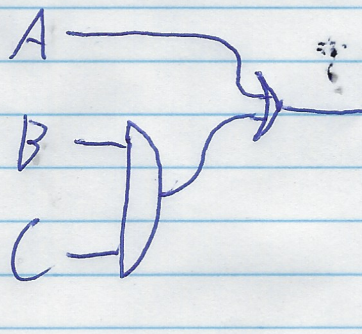
$$= A\bar{B}(C + \bar{C})$$
= as before
$$= A\bar{B}$$

$$AB + A\bar{B} + \bar{A}BC$$

$$= A(B + \bar{B}) + \bar{A}BC$$
= as before $+\bar{A}BC$
$$= A + \bar{A}BC$$

~~As before~~

$$A + \bar{A} = A$$
So $\underline{A + BC}$



$\underline{A + B \cdot C}$