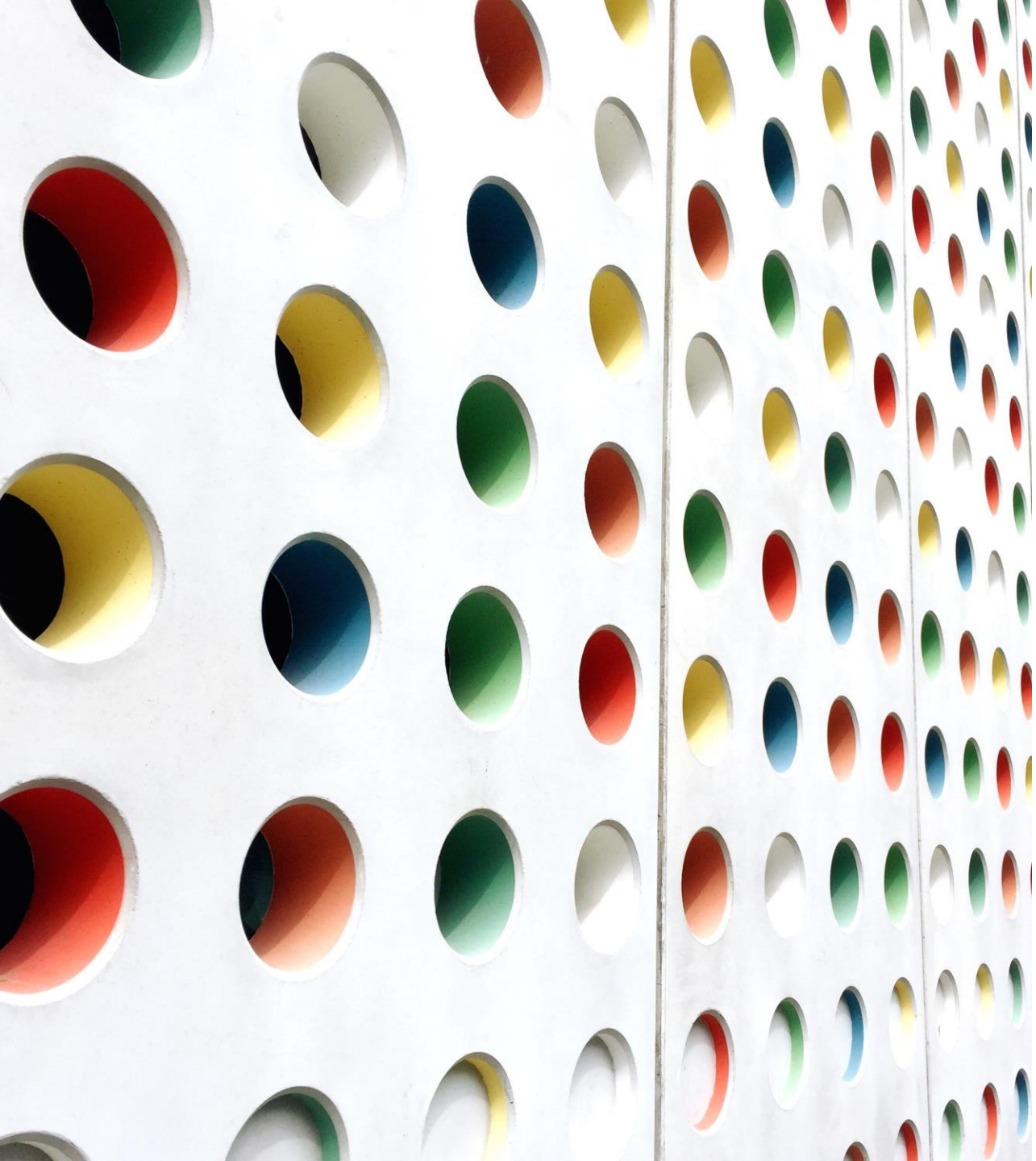


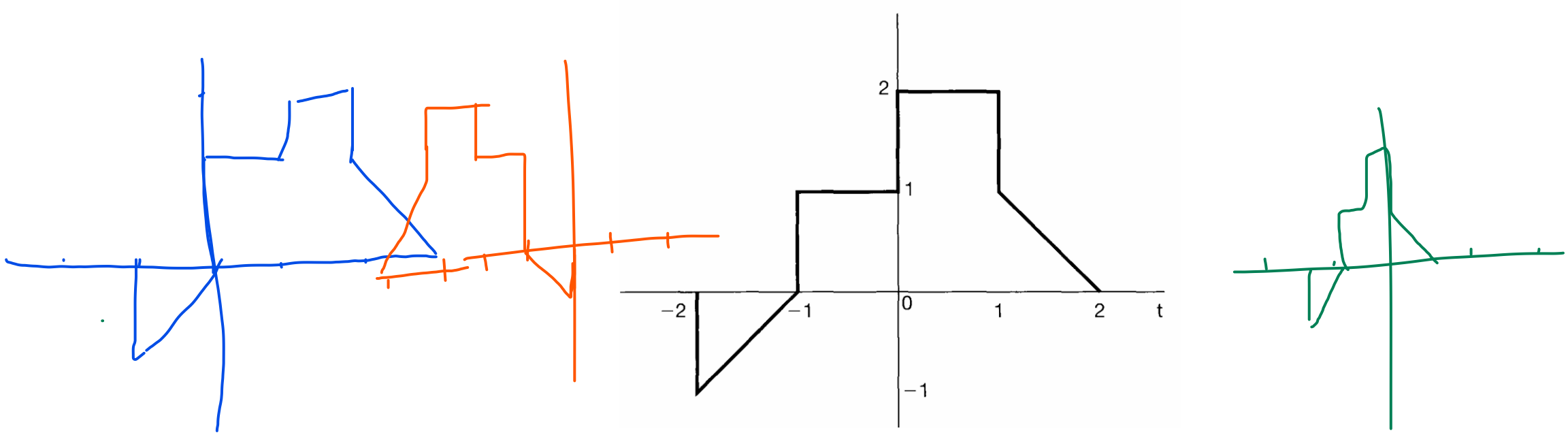
Practice Problem

REFERENCE:

CHAPTER-01(OPENHEIM)

CHAPTER-02(PROAKIS)

Problem-1



Obtain the following signal for given x(t) above.

(a) $x(t-1)$ **(b)** $x(2-t)$ **(c)** $x(2t+1)$

Problem-2

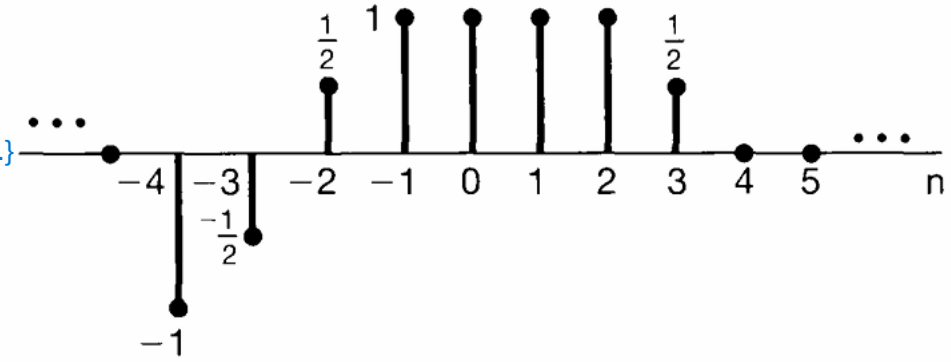
For the following diagram, determine-
i) x[n] ii) x[n-4] iii) x[3-n] iv) x[3n]

x[n] = {...,0,-1,-0.5,0.5,1, 1 ,1,1,0.5,0,...}
^

x[n-4] = {...,0, -1 ,-0.5,0.5,1,1,1,1,0.5,0,...}
^

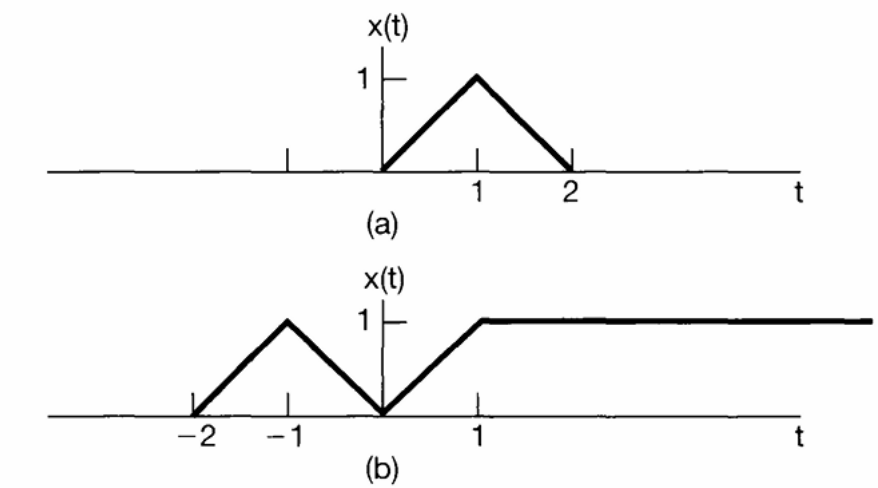
x[3-n] = {...,0,0.5,1,1,1,1,0.5, -0.5 ,-1,0,...}
^

x[3n] = {-0.5, 1 ,0.5}
^



Problem-3

Determine and sketch the even and odd parts of the signals



Formula: $x_e(t) = \frac{1}{2}[x(t) + x(-t)]$ and $x_o(t) = \frac{1}{2}[x(t) + x(-t)]$

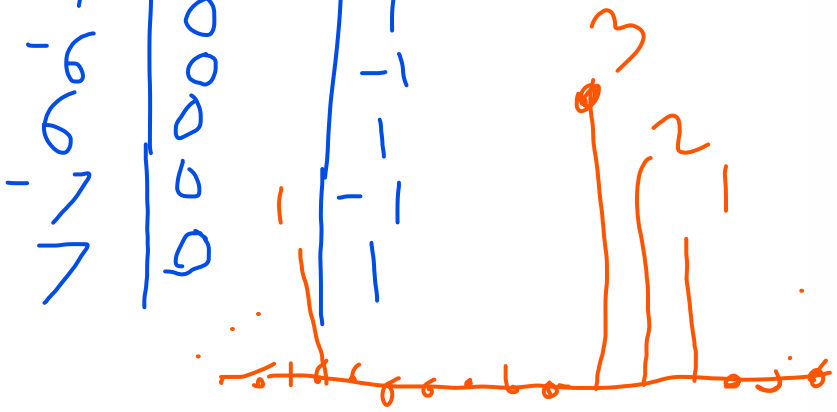
Problem-4

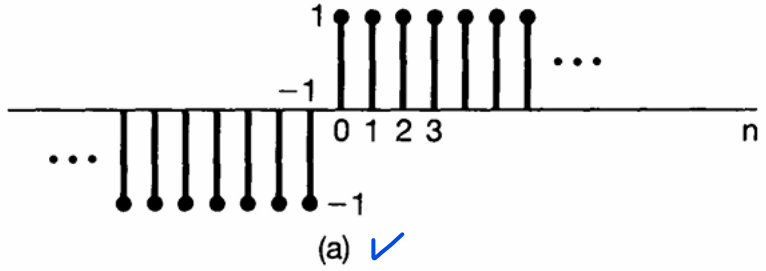
$x_e(n) = \frac{1}{2}(x(n) + x(-n))$

$x_o(n) = \frac{1}{2}(x(n) - x(-n))$

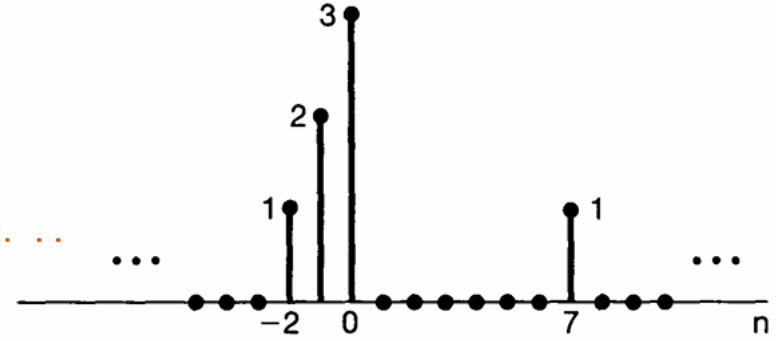
Determine and sketch the even and odd parts of the signals

x	e	o
0	1	0
-1	0	-1
-2	0	-1
-3	0	-1
-4	0	-1
-5	0	-1
-6	0	-1
-7	0	-1



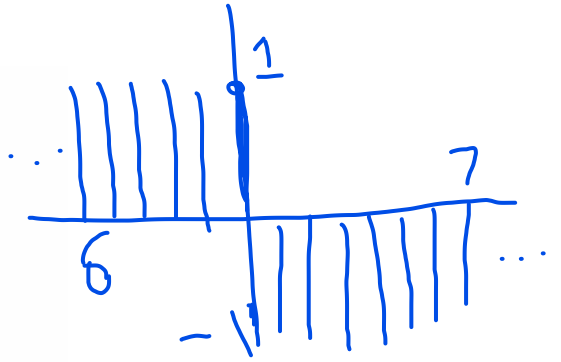


(a) ✓



(b) ✓

$x(-n)$



x	e	o
0	3	0
-1	1.5	1.5
-2	1.5	1.5
-3	0	3
-4	1.5	1.5
-5	1.5	1.5
-6	1.5	1.5
-7	3	0
7	0.5	0.5