

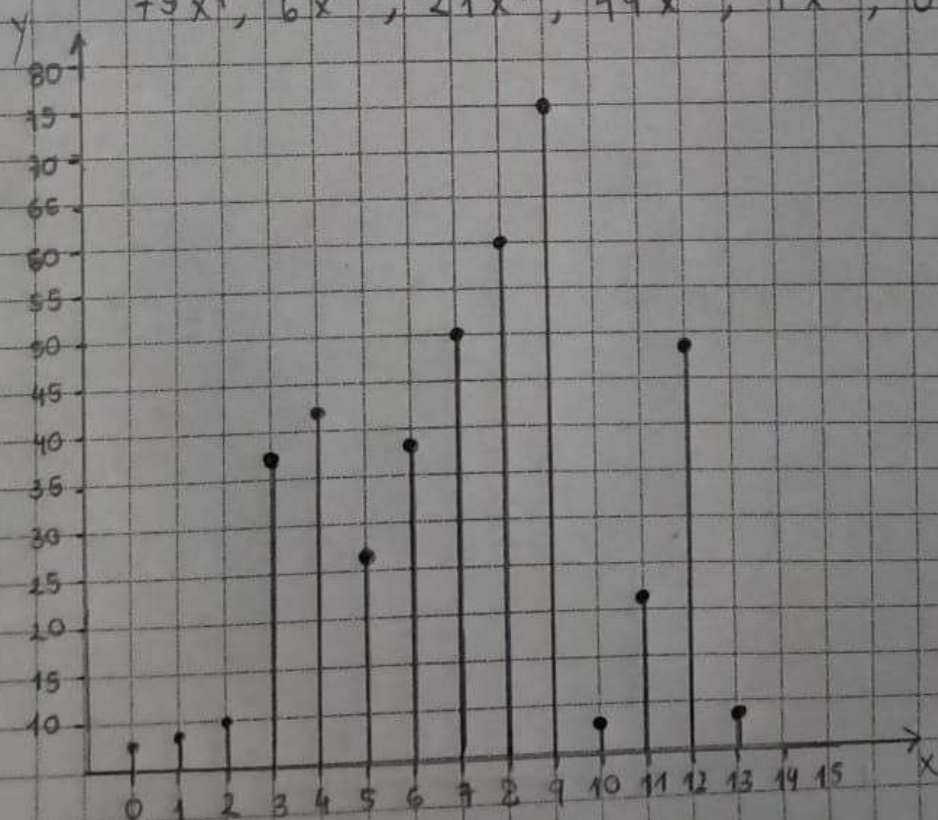
Ana Castro.

$$X[n] = [1, 0, 2, 5, 1, 4, 0, 3, 7, 1]$$

$$h[n] = [5, 6, 0, 0, 7, 0, 0]$$

$\begin{matrix} h & x \end{matrix}$	1	0	2	5	1	4	0	3	7	1
5	5	0	10	25	5	20	0	15	35	5
6	6	0	12	30	6	24	0	18	42	6
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
7	7	0	14	35	7	28	0	21	49	7
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0

$$Y(x) = (5, 6x, 10x^2, 37x^3, 42x^4, 26x^5, 38x^6, 50x^7, 75x^8, 6x^{10}, 21x^{11}, 49x^{12}, 7x^{13}, 0x^{14}, 0x^{15})$$



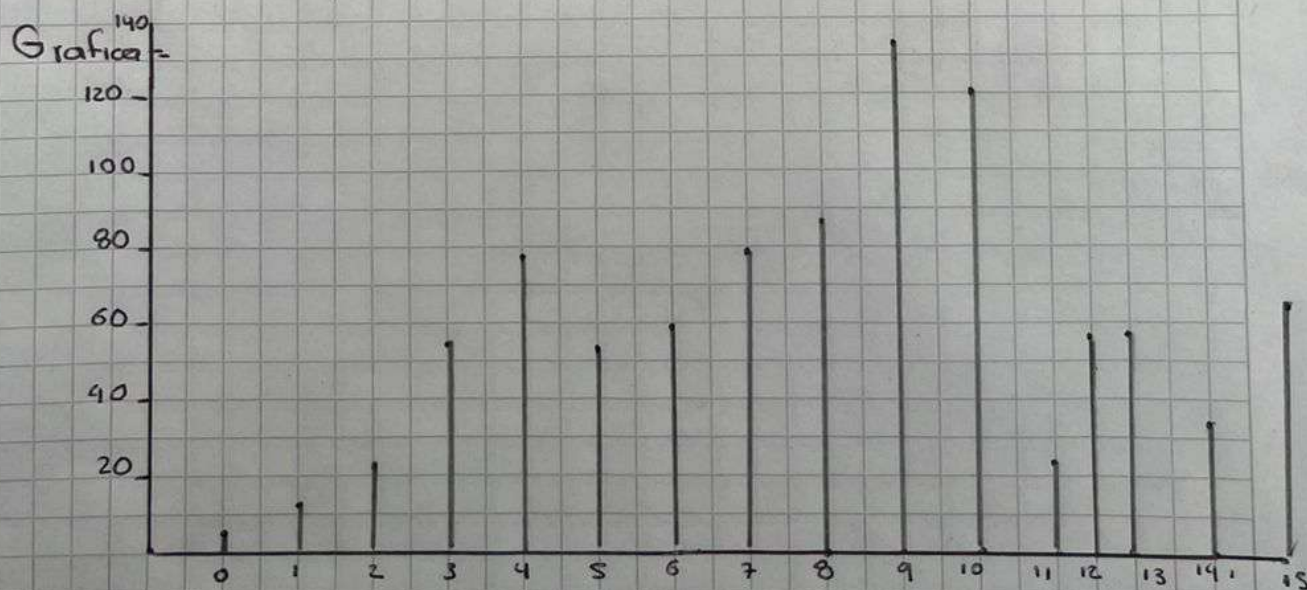
Daniel Silva

$$X[n] = [1, 1, 3, 7, 6, 2, 4, 1, 4, 8]$$

$$h[n] = [5, 6, 0, 0, 6, 0, 8]$$

$\begin{matrix} \backslash & x \\ b \end{matrix}$	1	1	3	7	6	2	4	1	4	8
5	5	5	15	35	30	10	20	5	20	40
6	6	6	18	42	36	12	24	6	24	48
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
6	6	6	18	42	36	12	24	6	24	48
0	0	0	0	0	0	0	0	0	0	0
8	8	8	24	56	48	16	32	8	32	64

$$y(x) = (5, 11x, 21x^2, 53x^3, 78x^4, 82x^5, 58x^6, 79x^7, 86x^8, 132x^9, 120x^{10}, 22x^{11}, 56x^{12}, 56x^{13}, 32x^{14}, 64x^{15})$$



Convolution felice:

$$x[n] = \{1, 0, 2, 5, 4, 6, 0, 7, 9, 1\}$$

$$h[n] = \{5, 6, 0, 0, 6, 5, 9\}$$

$$y[0] = x[0]h[0] = 1 \cdot 5 = 5$$

$$y[1] = x[0]h[1] + x[1]h[0] = (1 \cdot 6) + (0 \cdot 5) = 6$$

$$y[2] = x[0]h[2] + x[1]h[1] + x[2]h[0] = (1 \cdot 0) + (0 \cdot 6) + (2 \cdot 5) = 10$$

$$y[3] = x[0]h[3] + x[1]h[2] + x[2]h[1] + x[3]h[0] = (1 \cdot 0) + (0 \cdot 0) + (2 \cdot 6) + (5 \cdot 5) \\ = 12 + 25 = 37$$

$$y[4] = x[0]h[4] + x[1]h[3] + x[2]h[2] + x[3]h[1] + x[4]h[0] = (1 \cdot 6) + (0 \cdot 0) \\ + (2 \cdot 0) + (5 \cdot 6) + (4 \cdot 5) = 6 + 0 + 0 + 30 + 20 = 56$$

$$y[5] = x[0]h[5] + x[1]h[4] + x[2]h[3] + x[3]h[2] + x[4]h[1] + x[5]h[0] \\ = (1 \cdot 5) + (0 \cdot 6) + (2 \cdot 0) + (5 \cdot 0) + (4 \cdot 6) + (6 \cdot 5) = 5 + 0 + 0 + 0 + 24 + 30 \\ = 59$$

$$y[6] = x[0]h[6] + x[1]h[5] + x[2]h[4] + x[3]h[3] + x[4]h[2] + x[5]h[1] + x[6]h[0] \\ = (1 \cdot 9) + (0 \cdot 5) + (2 \cdot 6) + (5 \cdot 0) + (4 \cdot 0) + (6 \cdot 6) + (0 \cdot 5) \\ = 9 + 0 + 12 + 0 + 0 + 36 + 0 \\ = 57$$

$$y[7] = x[1]h[6] + x[2]h[5] + x[3]h[4] + x[4]h[3] + x[5]h[2] + x[6]h[1] + x[7]h[0] \\ = (0 \cdot 9) + (2 \cdot 5) + (5 \cdot 6) + (4 \cdot 0) + (6 \cdot 0) + (0 \cdot 5) + (7 \cdot 5) \\ = 0 + 10 + 30 + 0 + 0 + 0 + 35 \\ = 75$$

$$y[8] = x[2]h[6] + x[3]h[5] + x[4]h[4] + x[5]h[3] + x[6]h[2] + x[7]h[1] + x[8]h[0] \\ = (2 \cdot 9) + (5 \cdot 5) + (4 \cdot 6) + (6 \cdot 0) + (0 \cdot 0) + (7 \cdot 6) + (1 \cdot 5) \\ = 18 + 25 + 24 + 0 + 0 + 42 + 5 \\ = 134$$

$$y[9] = x[3]h[6] + x[4]h[5] + x[5]h[4] + x[6]h[3] + x[7]h[2] + x[8]h[1] + x[9]h[0]$$

$$= (5 \cdot 9) + (4 \cdot 5) + (6 \cdot 6) + (0 \cdot 0) + (7 \cdot 0) + (9 \cdot 6) + (1 \cdot 5)$$

$$= 45 + 20 + 36 + 0 + 0 + 54 + 5$$

$$= 160$$

$$y[10] = x[4]h[6] + x[5]h[5] + x[6]h[4] + x[7]h[3] + x[8]h[2] + x[9]h[1]$$

$$= (4 \cdot 9) + (6 \cdot 5) + (0 \cdot 6) + (7 \cdot 0) + (9 \cdot 0) + (1 \cdot 6)$$

$$= 36 + 30 + 0 + 0 + 0 + 6$$

$$= 72$$

$$y[11] = x[5]h[6] + x[6]h[5] + x[7]h[4] + x[8]h[3] + x[9]h[2]$$

$$= (6 \cdot 9) + (0 \cdot 5) + (7 \cdot 6) + (9 \cdot 0) + (1 \cdot 0)$$

$$= 54 + 0 + 42 + 0 + 0$$

$$= 96$$

$$y[12] = x[6]h[6] + x[7]h[5] + x[8]h[4] + x[9]h[3]$$

$$= (0 \cdot 9) + (7 \cdot 5) + (9 \cdot 6) + (1 \cdot 0)$$

$$= 0 + 35 + 54 + 0$$

$$= 89$$

$$y[13] = x[7]h[6] + x[8]h[5] + x[9]h[4]$$

$$= (7 \cdot 9) + (9 \cdot 5) + (1 \cdot 6)$$

$$= 63 + 45 + 6$$

$$= 114$$

$$y[14] = x[8]h[6] + x[9]h[5]$$

$$= (9 \cdot 9) + (1 \cdot 5)$$

$$= 81 + 5$$

$$= 86$$

$$y[15] = x[9]h[6]$$

$$= (1 \cdot 9)$$

$$= 9$$

Scribe

$y[n]$

175

150

125

100

75

50

25

0

2

4

6

8

10

12

14