Problem 5.9

Given filter coefficients are: $b_k = \{13, -13, 13\}$ and x[n] = 0, if n is even and x[n] = 1, if n is odd.

Compute y[n] by synthetic polynomial multiplication method:

n	-4	-3	-2	-1	0	1	2	3	4	5
x[n]	0	1	0	1	0	1	0	1	0	1
h[n]					13	-13	13			
h[0]x[n]	0	13	0	13	0	13	0	13	0	13
h[1]x[n-1]	-13	0	-13	0	-13	0	-13	0	-13	0
h[2]x[n-2]	0	13	0	13	0	13	0	13	0	13
y[n]	-13	26	-13	26	-13	26	-13	26	-13	26

Hence, from the table,

y[n] = -13, if n is even and y[n] = 26 if n is odd.