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Homework 2 – Q5

To match the sequence expression provided, x is a sequence with the length $5-3+1=3$, and we write it as $\langle a,b,c\rangle$. Then, we find the polynomials corresponding to sequences $\langle a,b,c\rangle$ and $\langle 1,1,-1\rangle$ and multiply them.

$(a+bx+cx^2)\cdot(1+x-x^2)$

$=a+bx+cx^2+ax+bx^2+cx^3-ax^2-bx^3-cx^4$

$=a+(a+b)x+(b+c-a)x^2+(c-b)x^3-cx^4$

Equate the coefficients of this polynomials with the terms of the sequence $\langle 1,0,-1,2,-1\rangle$. We can work out that $a=1, b=-1, c=1$.

So, the sequence x is $\langle 1,-1,1\rangle$.