Question 5

Because x is a sequence of length 3; (5 + 1 – 3 = 3);

Hence, write x as $< a, b, c >$ => $P_A(x) = a + bx + cx^2$

$< 1,1, -1 >$ => $P_B(x) = 1 + x - x^2$

Therefore, $P_A(x) * P_B(x) = (a + bx + cx^2)(1 + x - x^2)$

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

sequence is $< a, (a + b), (-a + b + c), (-b + c), (-c) >$

equal to $< 1,0, -1,2, -1 >$

Hence, we can get $a = 1;\ -c = -1 ===> c = 1; a + b = 0 ===> b = -1$

$\therefore a = 1, b = -1, c = 1$

$x = < 1, -1,1 >$