

Sasa Mardi, EE23BTECH11222

**Question 11.9.3-19:** Find the sum of the products of the corresponding terms of the sequences 2, 4, 8, 16, 32 and 128, 32, 8, 2,  $\frac{1}{2}$ .

**Solution:** Define the sequences as follows:

Sequence 1:  $x_1(n) = 2 \times 2^n$  with a common ratio of  $r_1 = 2$ .

Sequence 2:  $x_2(n) = 128 \times \left(\frac{1}{4}\right)^n$  with a common ratio of  $r_2 = \frac{1}{4}$ .

Tables for both sequences:

$n$	$x_1(n)$	$x_2(n)$
0	2	128
1	4	32
2	8	8
3	16	2
4	32	$\frac{1}{2}$

Table for the product of corresponding terms:

$n$	$x_1(n)$	$x_2(n)$	$x_1(n) \times x_2(n)$
0	2	128	256
1	4	32	128
2	8	8	64
3	16	2	32
4	32	$\frac{1}{2}$	16

Sum of the products of corresponding terms:

$$256 + 128 + 64 + 32 + 16 = 496$$

So, the sum of the products of the corresponding terms of the sequences is 496.