

Assignment 11.9.5 _1Q

EE22BTECH11219 - Rada Sai Sujan

QUESTION

Show that the sum of $(m+n)^{th}$ and $(m-n)^{th}$ terms of an A.P., is equal to twice the m^{th} terms.

Solution:

PARAMETER	VALUE	DESCRIPTION
$x(0)$	$x(0)$	First term
d	d	common difference
$x(n)$	$[x(0) + nd]u(n)$	General term of the series

TABLE I
PARAMETER TABLE I

For an AP,

$$x(n) = [x(0) + nd]u(n) \quad (1)$$

$$\Rightarrow x(m+n) + x(m-n) = [x(0) + (m+n)d] + [x(0) + (m-n)d] \quad (2)$$

$$= 2[x(0) + md] \quad (3)$$

$$\therefore x(m+n) + x(m-n) = 2x(m) \quad (4)$$

$x(0)$	3
d	2
m	6
n	2
$x(m+n)$	19
$x(m-n)$	11
$x(m)$	15

TABLE II
VERIFIED VALUES