Assignment 11.9.5_1Q

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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 Table1

For an AP,

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

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

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

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