

# 11.9.5.3

EE23BTECH11062 - V MANAS

## Question:

Let the sum of  $n, 2n, 3n$  terms of an AP be  $S_1, S_2$  and  $S_3$ , respectively, show that  $S_3 = 3(S_2 - S_1)$

## Solution:

Variable	Description
$x(0)$	First term of AP
$d$	common difference in the AP
$n$	number of terms in AP
$S_k$	sum of $k_n$ terms the AP

TABLE I  
VARIABLES USED

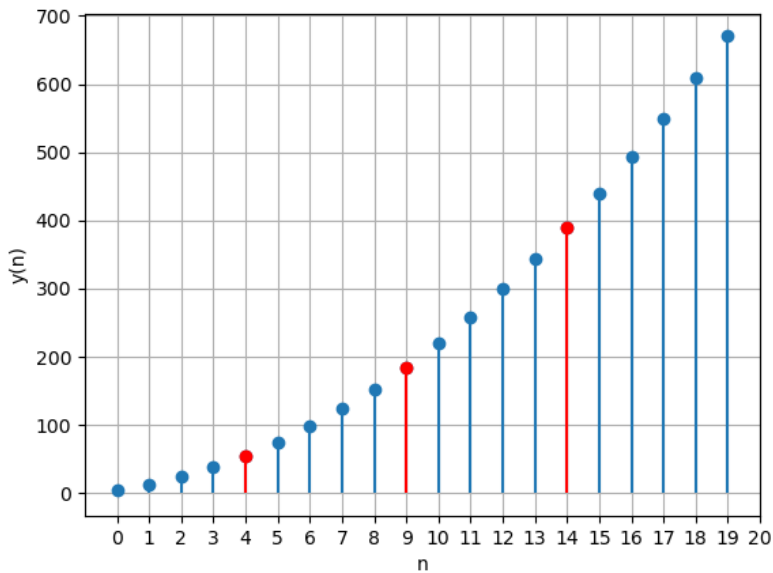


Fig. 1. Verification plot for the AP  $y(n) = \frac{n+1}{2}(2(5) + n(3))u(n)$

By equation(??)

$$S_1 = \frac{n+1}{2}(2x(0) + nd)u(n) \quad (1)$$

$$S_2 = \frac{2n+1}{2}(2x(0) + 2nd)u(n) \quad (2)$$

$$S_3 = \frac{3n+1}{2}(2x(0) + 3nd)u(n) \quad (3)$$

$$3(S_2 - S_1) = \frac{3n+1}{2}(2x(0) + 3nd)u(n) \quad (4)$$

$$3(S_2 - S_1) = S_3 \quad (5)$$