SEQUENCES

EE23BTECH11011- Batchu Ishitha*

Q:Two APs have the same common difference.The difference between their 100th terms is 100,what is the difference between their 1000th terms?
Solution:

$$x(n) = \{x(0) + nd\}u(n) \tag{1}$$
$$x(99) - y(99) = 100 \tag{2}$$
$$\implies (x(0) + 99d) - (y(0) + 99d) = 100 \tag{3}$$
$$\implies x(0) - y(0) = 100 \tag{4}$$

$$x(n) - y(n) = (x(0) + nd) - (y(0) + nd) \tag{5}$$
$$= x(0) - y(0) \tag{6}$$
$$= 100 \tag{7}$$
$$\implies x(999) - y(999) = 100 \tag{8}$$

Variable	Description	Value
$x(n)$	n^{th} term of X	none
$y(n)$	n^{th} term of Y	none
d	common difference between the terms of AP	none
$x(99) - y(99)$	difference of 99th terms of X and Y	100

TABLE 0

INPUT PARAMETERS

Let

$$x(n) = \{101, 106, 111, ...\} \tag{9}$$
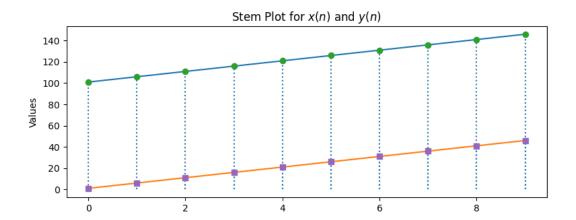$$y(n) = \{1, 6, 11, ...\} \tag{10}$$

Fig. 0.