

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:

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

$$x(99) - y(99) = 100 \quad (2)$$

$$\implies (x(0) + 99d) - (y(0) + 99d) = 100 \quad (3)$$

$$\implies x(0) - y(0) = 100 \quad (4)$$

$$x(n) - y(n) = (x(0) + nd) - (y(0) + nd) \quad (5)$$

$$= x(0) - y(0) \quad (6)$$

$$= 100 \quad (7)$$

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
$x(n) - y(n)$	difference of n^{th} terms of X and Y	$x(99) - y(99) = 100$

TABLE 0

INPUT PARAMETERS

$$x(n) = \{101, 106, 111, \dots\} \quad (8)$$

$$y(n) = \{1, 6, 11, \dots\} \quad (9)$$

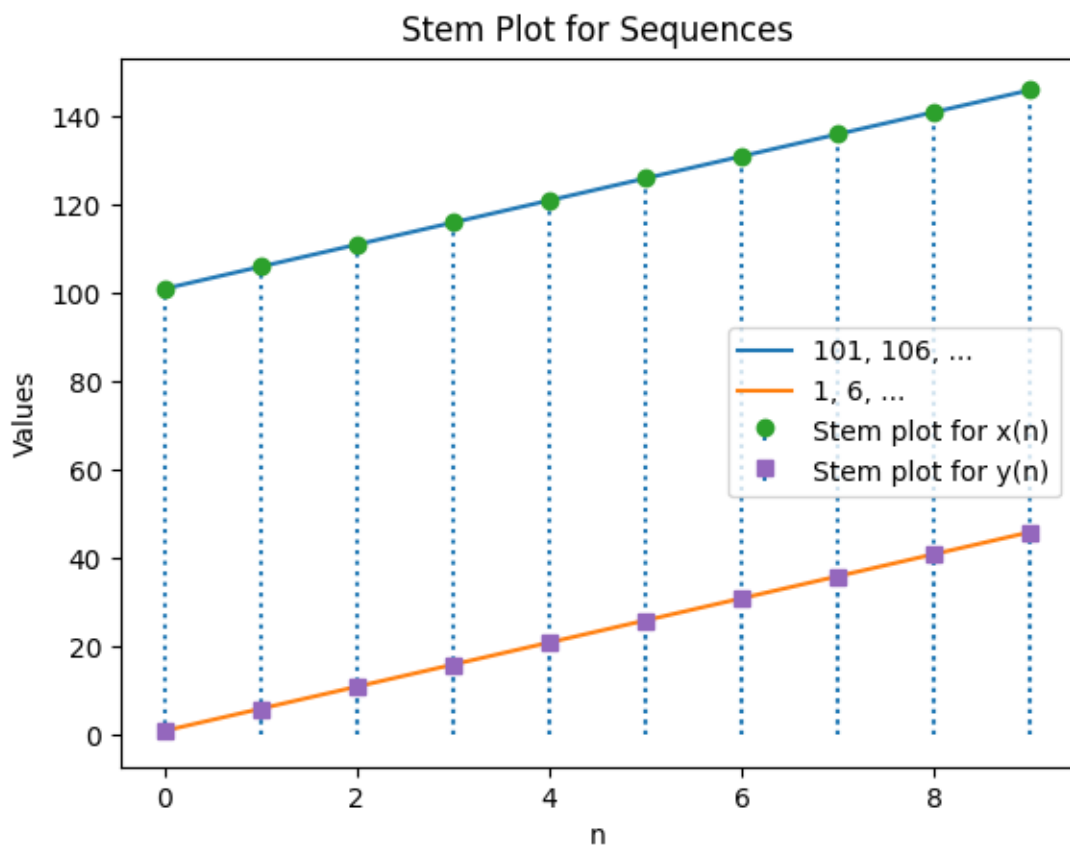


Fig. 0.

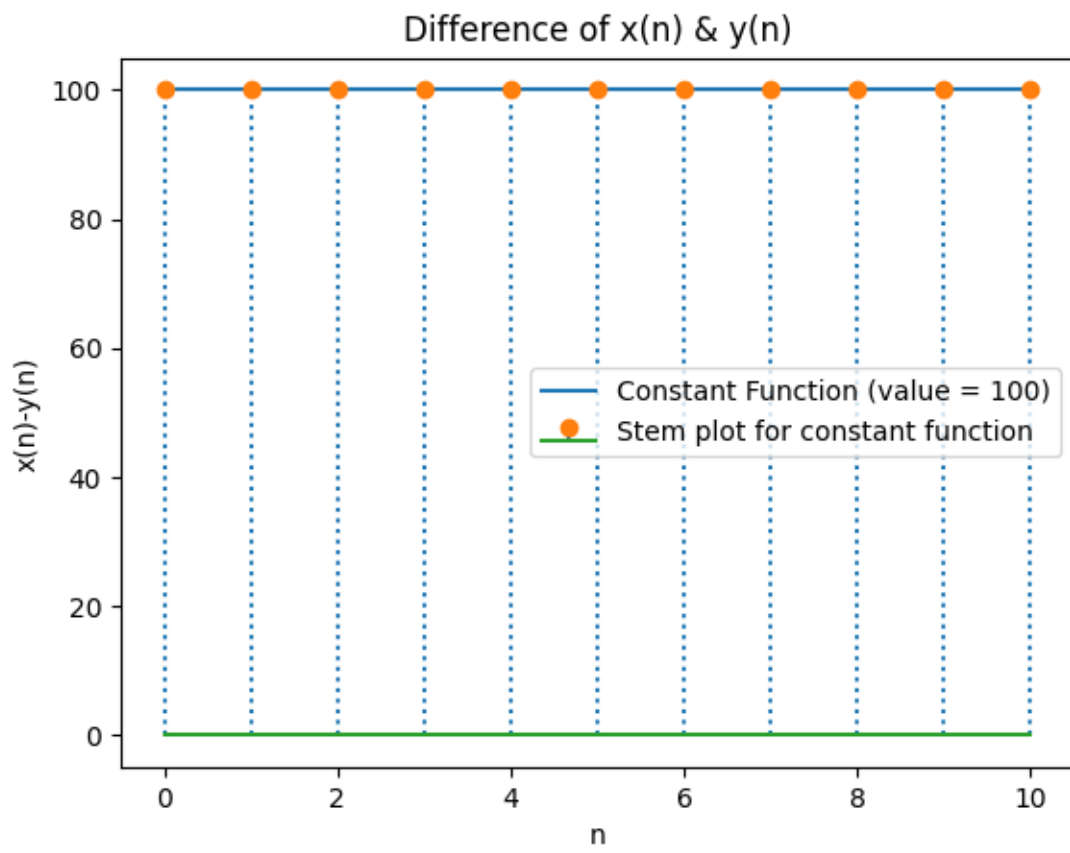


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