

Assignment-2

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I. VECTOR ARITHMETIC(CBSE)

Question: $(-1, 2, 1)$, $(1, -2, 5)$, $(4, -7, 8)$ and $(2, -3, 4)$ are the vertices of a parallelogram.

Variable	Value	Description
A	$(-1, 2, 1)$	Vertex A
B	$(1, -2, 5)$	Vertex B
C	$(4, -7, 8)$	Vertex C
D	$(2, -3, 4)$	Vertex D

Table 1
VARIABLES USED

Solution: property : opposite sides of parallelogram are equal.

A $(-1, 2, 1)$, **B** $(1, -2, 5)$, **C** $(4, -7, 8)$, **D** $(2, -3, 4)$

$$AB = B - A = (1 - (-1), -2 - 2, 5 - 1) = (2, -4, 4) \quad (1)$$

$$BC = C - B = (4 - 1, -7 - (-2), 8 - 5) = (3, -5, 3) \quad (2)$$

$$CD = D - C = (2 - 4, -3 - (-7), 4 - 8) = (-2, 4, -4) \quad (3)$$

$$DA = A - D = (-1 - 2, 2 - (-3), 1 - 4) = (-3, 5, -3) \quad (4)$$

Verify if AB is equal to CD and BC is equal to DA :

$$AB + CD = (2, -4, 4) + (-2, 4, -4) = (0, 0, 0) \quad (5)$$

$$BC + DA = (3, -5, 3) + (-3, 5, -3) = (0, 0, 0) \quad (6)$$

Since $AB + CD = 0$ and $BC + DA = 0$, the quadrilateral formed by the points is a parallelogram.

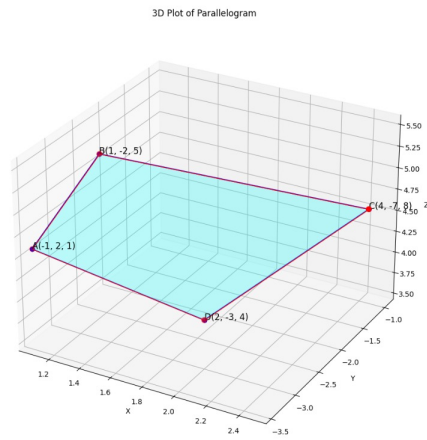


Fig. 1. Stem Plot of $y(n)$