**#1** (10 Points)

**Is the following function a proper distance function? Why? Explain your answer. Measure the distance between (0, 0, 0) and (0, 1, 0)**

ANSWER:

The function given above **IS NOT** a valid distance function.

A valid distance function should satisfy the following properties 🡪

1. Property 1: Distance is always non-negative
2. Property 2: Commutative, distance from “A to B” is distance from “B to A”
3. Property 3: Triangle inequality holds, distance from “A to C” must be less than or equal to distance from “A to B”

Let us take the 2 points as follows – A(0,0,0) & B(0,1,0)

Distance of AB = (|0 - 0|+|0 – 1| + |0-0|) 3 = 1