

**INTRODUCTION
TO
THE MULTI-DIMENSIONAL (MD)
CARTESIAN SPACE**

By

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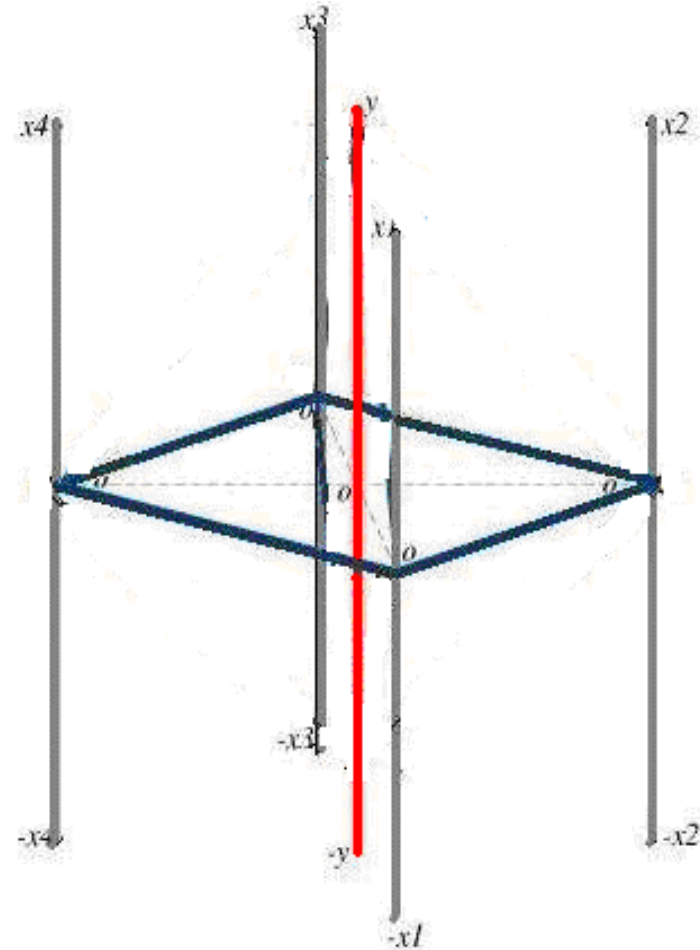
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THE MULTI-DIMENSIONAL (MD) CARTESIAN SPACE

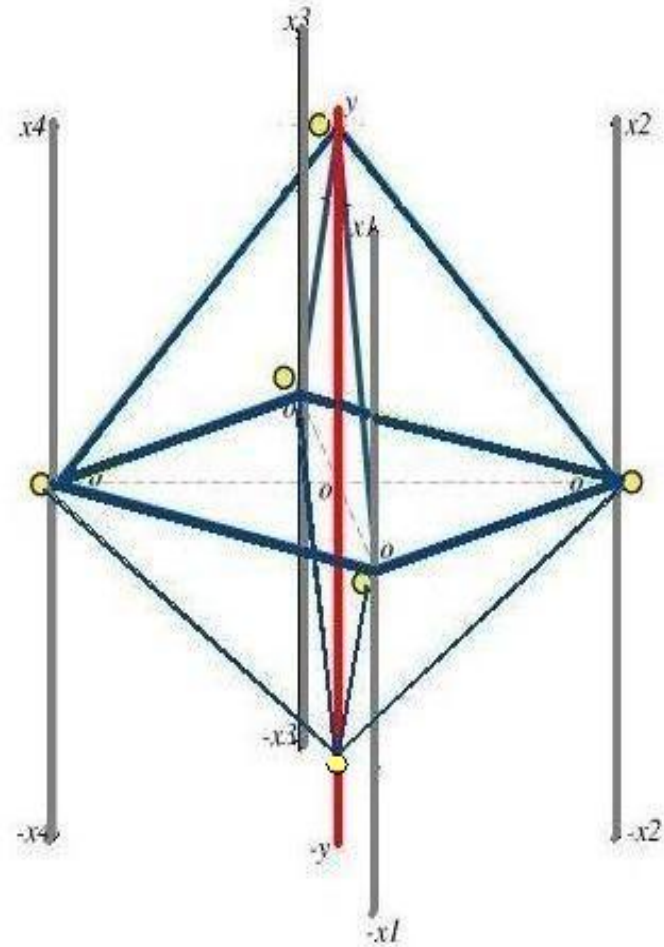
- In MD Cartesian Space, this Cartesian Space consists of five axes ($(X1, X2, X3, X4), Y$), representing four independent variables " $X1$ ", " $X2$ ", " $X3$ " and " $X4$ " and one dependent variable " y " respectively. Each " X " variable ($X1, X2, X3, X4$) and " Y " variable has its individual axis that is a vertical line with both positive and negative values. The positive and negative values are represented by $([X1, -X1], [X2, -X2], [X3, -X3], [X4, -X4], [Y, -Y])$ on the MD Cartesian Space.
- In the case of 2-D and 3-D Graphs and Cartesian Spaces, the individual variables can be anywhere along the vertical and horizontal axes; but in the case of MD Cartesian Space all variables (X_i) and the " Y " variable are either on the positive side of respective axes together on the negative side of their respective axes together. In other words, the values " Y " can only move in its axis. Therefore, any change in some or all " X_i " will affect " Y " directly.



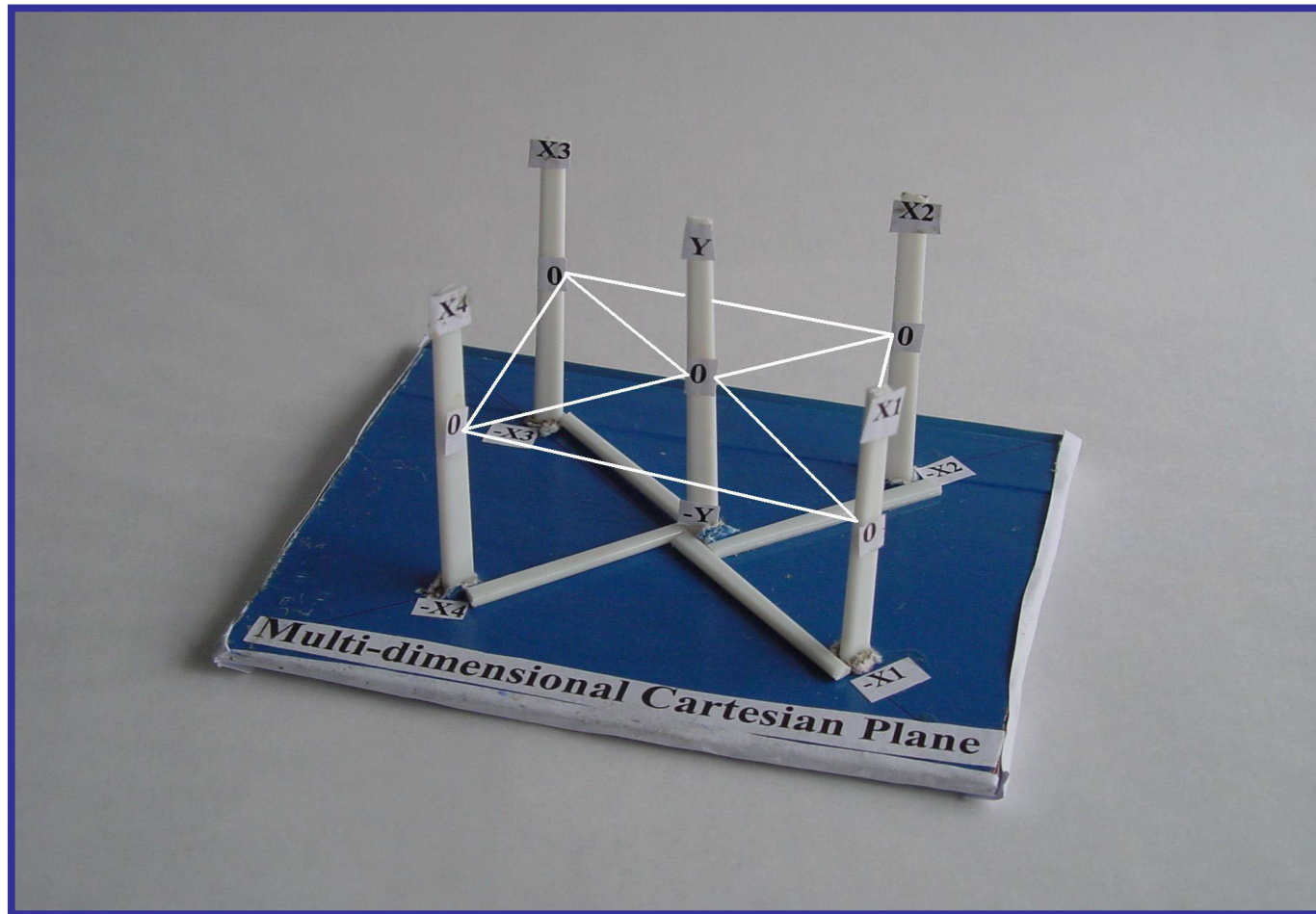
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- Representing the dependent variable, the fifth axis, “Y” is positioned in the center of the graph (among the other four axes). “Y” has a positive value and negative value. It is the convergent point of all the other four axes **X1, X2, X3 and X4**. In other words, all “Xi” axes converge at the “Y” axis. The result is a figure represented by a pyramid that can be reshaped into two cubes or one cube. The function to be used by the Multi-Dimensional Cartesian Space is equal to

$$Y = f([X1,-X1],[X2,-X2],[X3,-X3],[X4,-X4])$$



THE MULTI-DIMENSIONAL (MD) CARTESIAN SPACE PROTOTYPE



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