

# **Cartesian Transformations of Polar Coordination**

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## **Abstract (12 font)**

The polar coordinate systems and polar curves, as well as the Cartesian coordinate systems, have been elaborated and used to analyze plots and functions of real values. In this paper, we brought up the concepts of primary and secondary polar coordinate planes, enabling the computation of the Cartesian transformation of polar coordinates more efficient. The efficiency of the calculation is evaluated by the amount of the minimum valid computation number required. The concepts are derived from the fundamental relationship between the Cartesian coordinate system and polar coordinate systems and provide a new approach to the proof of trigonometric functions. We gave detailed estimates for the further approach toward other trigonometric functions. Application of this study on the ‘Polar Coordinate-based Graphics Tablets’ is also elaborated

## **Keywords (12 font)**

Polar coordination, Cartesian transformation, Trigonometric functions