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New Special Curves and Developable Surfaces

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Abstract: We define new special curves in Euclidean 3-space which we call slant helices and conical geodesic curves. Those notions are generalizations of the notion of cylindrical helices. One of the results in this paper gives a classification of special developable surfaces under the condition of the existence of such a special curve as a geodesic. As a result, we consider geometric invariants of space curves. By using these invariants, we can estimate the order of contact with those special curves for general space curves. All arguments in this paper are straight forward and classical. However, there have been no papers which have investigated slant helices and conical geodesic curves so far as we know.

Key Words: Helix, Darboux vector, developable surfaces, singularities

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