The Generalized Sine Law and Some Inequalities for Simplices

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Abstract:

The sines of k-dimensional vertex angles of an n-simplex is defined and the law of sines for k-dimensional vertex angles of an n-simplex is established. Using the generalized sine law for n-simplex, we obtain some inequalities for the sines of k-dimensional vertex angles of an n-simplex. Besides, we obtain inequalities for volumes of n-simplices. As corollaries, the generalizations to several dimensions of the Neuberg-Pedoe inequality and P. Chiakuei inequality, and an inequality for pedal simplex are given.

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