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Wu, Yan

A closed form solution for an unorthodox trigonometric integral.

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Summary: A closed form solution for the trigonometric integral $\int \sec^{2k+1} x dx$, $k = 0, 1, 2, \dots$, is presented in this article. The result will fill the gap in another trigonometric integral $\int \sec^{2m+1} x \tan^{2n} x dx$, which is neglected by most of the calculus textbooks due to its foreseeable unorthodox solution procedure comparing to the other three cases in $\int \sec^m x$ when m is even or n is odd.

Classification: I55

Keywords: trigonometric integral; recursive relation; mathematical induction; binomial expansion; integration by parts

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