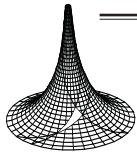

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Trigonometric identities via combinatorics

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Abstract. In this paper we consider the combinatorial approach of the multi-angle formulas $\sin n\theta$ and $\cos n\theta$. We describe a simple "drawing rule" for deriving the formulas immediately. We recall some theoretical background, historical remarks, and show some topics that is connected to this problem, as Chebyshev polynomials, matching polynomials, Lucas polynomial sequences.

Key words and phrases: multiple angle formulas, Chebyshev polynomials, matching polynomials, Fibonacci and Lucas numbers, combinatorial identities.

ZDM Subject Classification: 05A19.

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