POLYNOMIAL IDENTITY INVOLVING BINOMIAL THEOREM AND FAULHABER'S FORMULA

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1. APPROACH VIA SYSTEM OF LINEAR EQUATIONS

One approach to prove the conjecture was proposed by Albert Tkaczyk in his series of articles (two references). The essence of the approach lays in construction and solving of the particular system of linear equations. Such system linear equations is constructed using Binomial theorem and Faulhaber's formula that allows us to find closed froms of power sums as part of identity (reference to equation). Consider the case of equation (equation reference) for $m = 1$

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