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A generalized Newton binomial formula and a sum formula

The Newton's binom lies in the basis of this talk, and it's generalizations to sequences of polynomials of the binomial type. Applications to the generalized Waring's problem (Hua Loo-keng) and to the Hilbert – Kamke problem (G.I.Arkhipov) are given. The Taylor – Maklauren formula for polynomials and smooth functions are proven, and its applications to the numerical analysis (the solution of equations of the tangent Newton's method, the Hensel's lemma for complete non-archimedian fields, the approximative calculation of values for smooth functions at the point). The analogue of the Newton's binomial formula for the Bernoulli polynomials are given, and the Euler's – Maclauren sum formula is proven, the Poiss on's formula is derived. Examples of sequences of binomial type polynomials are given (the power polynomials (monoms), the lower and upper factorials, the Abel and Laguerre polynomials). The binomial properties of the Appell and Euler polynomials are found. The formula Taylor for polynomials and the smooth functions from several variables is proven, multivariate analogs the Euler – Maclauren and the Poisson formulas of the summation of values of functions on a lattice are got. The multivariate analog of this formulas for a lattice in the multiple complex space is examined. A number of properties of polynomials of the binomial type from several variables are proven.

SCIENTIFIC SEMINAR
"DIFFERENTIAL GEOMETRY AND APPLICATIONS"

headed by Academician of RAS Anatoly T. Fomenko

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