



ΠΑΝΕΠΙΣΤΗΜΙΟ ΙΩΑΝΝΙΝΩΝ

ΤΜΗΜΑ ΜΑΘΗΜΑΤΙΚΩΝ



Εβδομαδιαίο Σεμινάριο

APPROACHING INFINITY, HARDY'S SCALE AND GROWTH INDEX

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Approaching infinity we have to use big numbers and to write them in a short form, used, for instance, by Knuth, by Ackerman, by information encoding of ASCII, etc. This form leads to hyper-powers, which can be written as compositions of suitable functions. In the lecture some facts related to such compositions, as for instance, fractals generated from special entire complex functions will be given. The meaning of the hyper-iterations of the exponential function, which completes the Hardy's scale, will, also, be presented. The way of approaching infinity by a complex valued function, depends on the "level" of the function and it can be measured by its growth index. Some applications of this item have particular interest. For example, the growth index of the solution of a Volterra integral equation (with appropriate kernel) is less than or equal to the growth index of the perturbation.

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