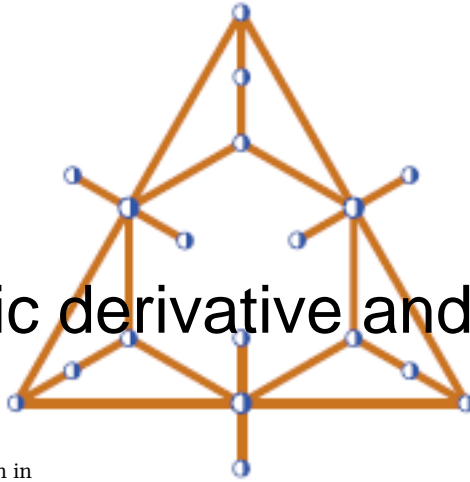


Bled'11 - 7th Slovenian International Conference on Graph Theory

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Arithmetic derivative and its graph



Content :

Arithmetic derivative is the function in number theory, sending each prime into 1 and satisfying the Leibniz rule $D(ab) = D(a)b + aD(b)$ for any a, b .

The corresponding dynamical system: $n \rightarrow D(n)$ has two obvious attractors: 0 and ∞ . One of the major conjectures about arithmetic derivative is that the corresponding directed graph, whose vertices correspond to nonnegative integers and whose arcs connect a number n with its derivative $D(n)$ contains no cycles except the loops in fixed points $p^{\{p\}}$, where p is any prime.

The purpose of the talk is i) to give a brief review of what is known or conjectured about arithmetic derivative, ii) to define some related new concepts and iii) to present some new results.

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