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Veniamin Kisunko* (vkisunko@math.toronto.edu). *The Converse of Abel's theorem*. Preliminary report.

I investigate an algebraization problem. The analogous problems were raised by Lie and Darboux in connection with the classification of surfaces of double translation; by Poincare and Mumford in connection with the Schottky problem; by Griffiths and Henkin in connection with a converse of Abel's theorem; by Bol and Akivis in the connection with the algebraization problem in the theory of webs. Interestingly, the complex-analytic technique developed by Griffiths and Henkin for the holomorphic case failed to work in the real smooth setting.

I develop a technique of, what I call, complex moments. Together with a differentiation rule it provides a unified approach to all the algebraization problems considered so far (both complex-analytic and real smooth). As a result I prove two variants ('polynomial' and 'rational') of a converse of Abel's theorem which significantly generalize results of Griffiths and Henkin. Already the 'polynomial' case is nontrivial leading to a new relation between the algebraization problem in the theory of webs and the converse of Abel's theorem. (Received July 23, 2009)