1025-30-23　　　　　**Ioan Hrinca*** (`IHrinca@otterbein.edu`), Otterbein College, Westerville, OH 43081. *On the Cauchy Integral Theorem.*

Cauchy's integral theorem is the fundamental theorem of the complex integral calculus. It is unfortunate that the usual proofs are so involved with topological questions arising from the nature of the path of integration that the essential simplicity of the underlying ideas becomes obscured. One way of avoiding the difficulties is to restrict the nature of the curves used. But this procedure seems undesirable beyond a certain point since one is thereby hampered in the applications. Surely one wants the curve to be at least as general as the usual "regular" curve, which has a continuously turning tangent except at isolated points, where it may have "corners". Also it is desirable to permit the curve to cut itself, so that there will be no difficulty later in showing that certain integrals are independent of the path.

The present discussion avoids most of the topological problems by first showing the existence of the indefinite integral (under Goursat's assumptions) and then by using it to compute the integral of Cauchy's theorem. It thus becomes unnecessary to approximate the regular curve by a polygonal line (as in the original proof given by Goursat). (Received December 25, 2006)