

1054-01-21

Victor L. Shapiro* (shapiro@math.ucr.edu), Department of Mathematics, University of California, Riverside, Riverside, CA 92521-0001. *On Green's Theorem.*

S. Bochner, one of the leading mathematical analysts of the 20th century, published a new result about Green's theorem in the 1955 Math. Zeit. His new result went as follows: Let D be a simply connected domain in the plane with rectifiable boundary C . Let $V=(A,B)$ be a continuous vector field defined in $D+C$. Suppose A and B have total differentials at all the points of D . Also, suppose $\text{div}V$ is Lebesgue integrable on D and mean-continuous everywhere in D . Then Green's theorem holds for V on $D+C$. Using his method, Bochner could not eliminate the mean-continuity assumption. Using double trigonometric series, which was a method completely different than Bochner's, we were able to prove his theorem without the mean-continuity assumption. Our paper was published in J. London Math Soc. 1957. (Received July 15, 2009)