is continuous and as is readily seen single-valued. Thus the first term on the right taken along any closed path of the region is 0. As to the second term, consider any closed path not including c. Then $F(z)$ and $F'(z)=f(z)$ are both continuous throughout the enclosed region and hence the integral along the boundary of the region is 0.* Finally let the path include c and surround c by a small circle. Then $\int F(z)\,dz$ extended in the usual way over the path and the circle will vanish. But the contribution that the circle yields is readily seen to be null; and thus $\int F(z)\,dz$ along any closed path whatever vanishes. Hence $\varphi(z)$ is analytic at c too. Its derivative at c is

$$\lim_{z=c} \frac{\varphi(z)}{z-c} = \lim_{z=c} f(z)$$

Hence $f(z)$ is continuous at c and thus fulfills both conditions of the definition of an analytic function given in I, and the proof is complete.†

HARVARD UNIVERSITY, *March* 1896.

ON THE MOTION OF A HOMOGENEOUS SPHERE OR SPHERICAL SHELL ON AN INCLINED PLANE, TAKING INTO ACCOUNT THE ROTATION OF THE EARTH.

BY PROFESSOR ALEXANDRE S. CHESSIN.

The influence of the rotation of the earth on the motion of bodies on its surface has been the subject of most interesting experiments, of which those with falling bodies and those of Foucault with the pendulum and the gyroscop may be mentioned. We propose to give here another interesting illustration of that influence, namely, on the motion of a homogeneous sphere or spherical shell on a plane inclined to the horizon. We will identify the system of axes (X, Y, Z) with the *absolute*, the system (Ξ, Υ, Z) with the *relative*

---

* Cf. Goursat's proof of this theorem, *Acta Math.*, vol. IV.; Harkness and Morley, *Theory of Functions*, p. 164.

† Hölder has given in the *Math. Annalen*, vol. 20, 1882, a proof very similar to this. He integrates the given function $f(z)$ twice and shows that the second integral is analytic at c too. Hence he infers that $f(z)$ is analytic at c. I had obtained the proof here given, however, before Hölder's proof was known to me.