whether it is ever possible for the first and second fundamental forms of a surface to be the second and first respectively of a second surface. In answer it is found that there is a class of surfaces possessing this property ; that they are ruled surfaces with imaginary generatrices ; that the sphere of radius unity is the only real surface of the class ; and, furthermore, that the second surface differs from the first only by a translation in space.

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GREEN'S FUNCTIONS IN SPACE OF ONE DIMENSION.

BY PROFESSOR MAXIME BÔCHER.

(Read before the American Mathematical Society, February 23, 1901.)

I WISH to make a brief communication to the Society of some results which I have obtained, reserving proofs and further developments for another occasion.

By a Green's function is ordinarily understood a solution of Laplace's equation which vanishes on the boundary of a certain region, and within this region is discontinuous at only one point, where it becomes infinite like $1/r$ or $\log r$, according as we are dealing with Laplace's equation in three or in two dimensions. We may speak of this as a Green's function of the first kind, in distinction to the generalized Green's fûnction for which more complicated conditions than the mere vanishing of the function are imposed on the boundary of the region.

This fundamental conception has been generalized by replacing Laplace's equation on the one hand by other homogeneous linear partial differential equations of the second order (cf. Encyklopädie, volume 2, p. 516); on the other hand by the ordinary differential equation $d^2y/dx^2 = 0$, which may be called Laplace's equation in space of one dimension (cf. Burkhardt, *Bulletin de la Société mathématique de France*, volume 22 (1894), p. 71). This suggests at once the possibility of considering in place of Laplace's equation the general ordinary homogeneous linear differential equation of the second order. I find that we can not only do this,