the radius opposite the pole. Various applications are given, including the determination of the sharp bound in Hadamard's three circles theorem. That is, we suppose that $f(z)$ is regular and single-valued for $q \leqq |z| \leqq 1$, that $|f(z)| \leqq p$ for $|z| = q$ and $|f(z)| \leqq 1$ for $|z| = 1$, and find the largest possible value for $|f(z_0)|$, where z_0 is some point within the ring. A formula for the bound is given in terms of theta functions, and the problem is also discussed geometrically. In particular, if $q < p < 1$, then the maximum value of $|f(z_0)|$ is attained by a function $f(z)$ which is univalent in $q < |z| < 1$, and maps this ring on $|w| < 1$ excluding an arc of $|w| = p$. (Received January 23, 1943.)

114. Raphael Salem: *Sets of uniqueness and sets of multiplicity.*

An algebraic integer α having the property that all its conjugates have their moduli inferior to 1 will be called a "Pisot number" (α is necessarily real and greater than 1). The following theorems are proved: I. Let $0 < \xi < 1$. If the Fourier-Stieltjes transform $\prod_{k=0}^{\infty} \cos \pi u \xi^k$ does not tend to zero for $u \rightarrow \infty$, then $1/\xi$ is a Pisot number. II. Let $0 < \xi < 1/2$, and let P be the symmetrical perfect set of Cantor type and of constant ratio of dissection ξ constructed on $(0, 2\pi)$ (relative length of the black intervals is $1 - 2\xi$). Then P is a set of uniqueness for trigonometrical series if (and only if) $1/\xi$ is a Pisot number. III. There exist Pisot numbers of the form $2 + \epsilon$, ϵ being positive and arbitrarily small; hence, there exist sets of uniqueness which are of Hausdorff dimensionality as near to 1 as desired. (Received January 11, 1943.)

115. Gabor Szegö: *On the oscillation of differential transforms.* IV. *Jacobi polynomials.*

Let $\alpha \geqq 0$, $\beta \geqq 0$, $c \geqq 0$. In a recent paper (Trans. Amer. Math. Soc. vol. 52 (1942) pp. 463–497, cf. p. 489), E. Hille proved the following two theorems: (A) The differential operator $\vartheta - c = (1 - x^2)D^2 + [\beta - \alpha - (\alpha + \beta + 2)x]D - c$, $D = d/dx$, does not diminish the number of the sign changes of a function in $-1 < x < +1$; (B) If the number of the sign changes of $(\vartheta - c)^k f(x)$ remains less than or equal to N for all k, $k = 1, 2, 3, \cdots$, then $f(x)$ is a polynomial of degree less than or equal to N. The purpose of the present note is the extension of Theorem A to $\alpha > -1$, $\beta > -1$ and of Theorem B to arbitrary real values of α and β, in the latter case with the modification that the possible degree of the polynomial $f(x)$ is less than or equal to $N + \gamma$, $\gamma = \gamma(\alpha, \beta, c)$. (Received January 20, 1943.)

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116. Stefan Bergman: *A formula for the stream function in compressible fluid flow.*

Using the hodograph method and a general representation for the stream function of a flow of an incompressible fluid (see Bergman, *Hodograph method in the theory of compressible fluid,* Publication of Brown University, 1942) the author gives an explicit formula for the stream functions of flows of certain types. (Received January 27, 1943.)

117. Nathaniel Coburn: *Boundary value problems in plane plasticity.* Preliminary report.

The following problem is discussed in this paper: given an infinite plate of perfectly plastic material bounded by the x-axis; to determine the stresses within the plate when the stresses on the boundary are known. First, the equation of plasticity (yield