no point of B. Let $f(z)$ be analytic and bounded in G. A necessary and sufficient condition for the existence of polynomials $\{p_n(z)\}$ which converge to $f(z)$ in G so that (1) *holds is that there exist a function analytic and bounded in Γ and equal to $f(z)$ in G.*

The proof of this theorem is much the same as for Theorem A taken together with the remark of §5 in the earlier paper and is therefore omitted.

The conclusion of Theorem D simply means of course that $f(z)$ shall be analytically extensible throughout Γ.

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A GENERALIZED PARSEVAL'S RELATION

BY E. S. QUADE

A function $\phi(x)$ which is non-negative, convex, and satisfies the conditions $\phi(0)=0$ and $(\phi(x)/x)\rightarrow\infty$ as $x\rightarrow\infty$ will be called a Young's function. Given such a function $\phi(x)$, a second function, $\psi(x)$, with the same properties can be found such that Young's inequality, $ab\leqq\phi(a)+\psi(b)$, holds for every $a, b\geqq 0$. The functions $\phi(x)$ and $\psi(x)$ are then said to be complementary in the sense of Young.†

If $x(t)$ is such that $\int_a^b\phi(|x|)dt$ exists, $x(t)$ is said to belong to the space $L_\phi(a, b)$. This space is not necessarily linear.‡ For this reason we denote by $L_\phi^*(a, b)$ the class of all functions $x(t)$, $a\leqq t\leqq b$, such that the product $x(t)y(t)$ is integrable for every $y(t)\epsilon L_\psi(a, b)$. If we put

$$\|x\|_\phi = \sup_y\left|\int_a^b x(t)y(t)dt\right|$$

for all $y(t)$ with

$$\rho_y \equiv \int_a^b \psi(|y|)dt \leqq 1,$$

then L_ϕ^* is a linear metric, and complete space.§ A function

† W. H. Young, Proceedings Royal Society, (A), vol. 87 (1912), pp. 225–229.

‡ W. Orlicz, *Über eine gewisse Klasse von Räumen vom Typus B*, Bulletin, Acad́emie Polonaise, (A), Cracovie (1932).

§ A. Zygmund, *Trigonometrical Series*, 1935, pp. 95–100.