COLLOQUIUM MATHEMATICUM

VOL. XXII 1970 FASC. 1

P R O B L È M E S

P 200, R 1. The answer is positive if continuum X is either indecomposable or irreducible of type λ (1).

V. 1, p. 118.

(1) L. Mohler, *On locally homeomorphic images of irreducible continua*, this fascicle, p. 69-73

P 406, R 1. The author announces a positive answer (2).

X. 1, p. 78.

(2) S. Hartman, *Quelques problèmes dans l'algèbre des mesures continues*, Colloquium Mathematicum (to appear).

P 587, R 2. The solution announced in R 1 has already appeared in print (3).

XVII. 1, p. 146, et XX. 1, p. 153.

(3) Martin Fox and George S. Kimeldorf, *Noisy duels*, SIAM Journal of Applied Mathematics 17 (1969), p. 353-361.

G. GRÄTZER, J. PŁONKA, and A. SEKANINA (WINNIPEG)

P 691 et **P 692.** Formulés dans la communication *On the number of polynomials of a universal algebra I.*

Ce fascicule, p. 9.

J. R. RETHERFORD (BATON ROUGE)

P 693. Formulé dans la communication *Schauder bases and best approximation.*

Ce fascicule, p. 109.

S. HARTMAN (WROCŁAW)

P 694. Let $M_c(G)$ be the algebra of all continuous measures on a locally compact abelian group G. Find a characterization of those $\mu \in M_c(G)$ whose Gelfand transform $\tilde{\mu}$ has a compact carrier in the space $\mathfrak{M}(M_c(G))$ of all maximal regular ideals of $M_c(G)$.

New Scottish Book, Problem 831, 13. VI. 1969.

P 695. Does there exist on a circle a continuous measure μ such that its Fourier transform $\hat{\mu}$ satisfies inequality $|\hat{\mu}(n)| \geqslant \delta > 0$ for infinitely many $n \in \boldsymbol{Z}$ and equality $\hat{\mu}(n) = 0$ for all other $n \in \boldsymbol{Z}$?

New Scottish Book, Problem 835, 6. X. 1969.

Z. ZIELEŹNY (WROCŁAW)

P 696. Let $K_{x,y}$ be a distribution on $R^n \times R^n$. Assuming that $K_{x,y}$ is of class C^∞ with respect to x and that, for each x_0, $K_{x_0,y}$ belongs to E'_y, one can define the convolution

$$Tu = \int K_{x,x-y} u_y dy,$$

where $u \in D'(R^n)$ and the integral sign has symbolical meaning only. Under what conditions $Tu \in E$ implies $u \in E$ for each $u \in D'$? In other words, when the convolution operator is hypoelliptic?

New Scottish Book, Problem 832, 14. VI. 1969.

Б. ГНЕДЕНКО (МОСКВА)

P 697. В задачах теории надежности и теории массового обслуживания возникают задачи следующего типа: найти экстремальные значения функционала $A[F_1(x), F_2(x), \ldots, F_n(x)]$, определенного на классе функций распределения. На функции распределения $F_k(x)$ могут быть наложены те или иные ограничения. Построить теорию решения таких экстремальных задач.

Новая Шотландская Книга, Пробл. 836, 5. XI. 1969.

P 698. Случайные величины $\xi_{n1}, \xi_{n2}, \ldots, \xi_{nk}, \ldots$ при каждом n взаимно независимы и при некоторых κ_n функции распределения сумм $s_n = \xi_{n1} + \xi_{n2} + \ldots + \xi_{nk_n}$ сходятся. Целочисленные случайные величины ν_n независимы от ξ_{nk} для $k = 1, 2, \ldots$ и таковы, что

$$P\left(\frac{\nu_n}{k_n} < x\right) \to A(x),$$

где $A(x)$ — функция распределения. Спрашивается, существует-ли предельное распределение для сумм

$$\zeta_n = \xi_{n+1} + \xi_{n+2} + \ldots + \xi_{n\nu_n} \quad (n \to \infty)?$$

Для случая $P\{\xi_{nk} < x\} = F_n(x)$ решение положительно.

Новая Шотландская Книга, Пробл. 837, 5. XI. 1969.

B. FREYER and D. SZÁSZ (BUDAPEST)

P 699. Let $g(z)$ be a generalized probability generating function of the form

$$g(z) = \int_0^\infty z^x dG(x),$$

where $G(x)$ is a probability distribution function, $G(0) = 0$ and $G(+0) < 1$. Does it follow from the equality $g(w_1(t)) \equiv t(w_2(t))$ $(-\infty < t < +\infty)$, where $w_1(t)$ and $w_2(t)$ are infinitely divisible characteristic functions, that $w_1(t) \equiv w_2(t)$ $(-\infty < t < +\infty)$?

New Scottish Book, Problem 838, 6. XI. 1969.

D. SZÁSZ (BUDAPEST)

P 700. Denote by $Q_\xi(h)$ the concentration function of a random variable ξ, defined by

$$Q_\xi(h) = \sup_{-\infty < x < +\infty} P\{x \leqslant \xi \leqslant x+h\}.$$

Let $\xi_1, \xi_2, \ldots, \xi_n, \ldots$ be independent, identically distributed random variables such that $M|\xi_n|^\alpha = \infty$ $(0 < \alpha \leqslant 2)$. Put $\eta_n = \xi_1 + \ldots + \xi_n$. Is it true that $Q_{\eta_n}(h) = O(1/n^{1/\alpha})$?

New Scottish Book, Problem 839, 6. XI. 1969.