

RESEARCH PROBLEMS

16. Richard Bellman: *Number theory.*

Let $f(t)$ be the number of solutions of $y^2 + 2 = tx^2$ in integers x and y . It is known that $f(t)$ is finite for each t . What bound can one obtain for $f(t)$, and what asymptotic relation, if any, holds for

$$\sum_{t=1}^T f(t) \quad \text{as } T \rightarrow \infty?$$

(Received January 10, 1955.)

17. Richard Bellman: *Analysis.*

Let

$$x = \sum_{n=1}^{\infty} t^n/n^s, \quad y = \sum_{n=1}^{\infty} t^n/n^{s+1}, \quad |t| < 1.$$

Eliminating t we have $y = \sum_{n=1}^{\infty} c_n x^n$. What is the radius of convergence of this series as a function of s for $-\infty < s < \infty$? (Received January 10, 1955.)

18. Ernest Michael: *Continuity of multiplicative linear functionals.*

Let A be a closed subalgebra of the cartesian product (product topology) of countably many commutative, complex Banach algebras. Is every complex-valued multiplicative linear functional on A continuous? (Reference: E. Michael, *Memoirs of the American Mathematical Society*, no. 11, 1952, section 12.) (Received January 18, 1955.)

19. E. T. Parker: *A tensor equation.*

Let $[g_{ab}]$ be a symmetric $n \times n$ matrix of real analytic functions of n real variables, with nonzero determinant over a neighborhood. Let g_{ab} be the covariant metric tensor of a Riemannian space. Find a necessary and sufficient condition on g_{ab} in order that there exist a scalar whose second covariant derivative is g_{ab} over a neighborhood. One might also find conditions for the existence of such a scalar over the space. It may be possible to obtain a result under a hypothesis weaker than that the functions of g_{ab} be analytic. The question might be of interest in non-Riemannian spaces. (Received February 2, 1955.)

20. Casper Goffman and G. M. Petersen: *Consistent matrix summability methods.*

Regular matrix methods A and B are called consistent if every bounded sequence summed by both methods is summed to the same value. Show, for every set S of regular methods which are mutually consistent, that there is a set $T \subset S$ of regular methods which are mutually consistent and such that every bounded sequence is summed by a method in T . In particular, consider the case where S has two elements. (Received February 25, 1955.)

Problems Discussed by the XIth General Assembly of the International Radio Scientific Union, and Called to the Attention of Mathematicians

(Communicated to the International Mathematical Union by Pro-