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Abstract: Let A be a commutative complex Banach algebra with unit. A famous theorem of Gleason Kahane-Zelasko states that a non-trivial linear functional $f : A \rightarrow \mathbb{C}$ is multiplicative if and only if $f(x) \neq 0$ for all invertible $x \in A$. S. H. Kulkarni extended this result to real Banach algebras. In this paper a generalization of Kulkarni's theorem is proved: A non-trivial, real-linear, complex-valued functional f on a real Banach algebra A with unit is multiplicative if and only if $(f(a))^2 + (f(b))^2 \neq 0$ for all commuting $a, b \in A$ with $a^2 + b^2 \in \{exp(x) : x \in A\}$.

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Abstract: Many authors have worked on the problem of obtaining integral relations involving higher classes of special functions of one or more variables (see Sivastava, Gupta and Goyal [4, pp. 72-74, 156-161] for details). In this paper we derive two new integral relations associated with some elementary functions and illustrate how they can be applied to derive double integrals which may be of interest. One of our integral relations is applied to evaluate three new and general double integrals involving a special case of the multivariable H -function of Srivastava and Panda [6].

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ON A THEOREM OF BESICOVITCH: VALUES OF ARITHMETIC FUNCTIONS THAT DIVIDE THEIR ARGUMENTS

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