

Pacific Journal of Mathematics

**ADDENDUM TO: "RATIONAL APPROXIMATION OF e^{-x} ON
THE POSITIVE REAL AXIS"**

DONALD J. NEWMAN AND A. R. REDDY

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D. J. NEWMAN AND A. R. REDDY

Our aim in this addendum is to improve Theorem 3 of Newman and Reddy (*Pacific J. Math.*, **64** (1976), 227–232). We also take this opportunity to correct some misprints occurring in Theorem 6 of the above paper. For convenience we refer the above note to [1]. We follow here notation and numbering as in [1].

THEOREM 3*. $\lambda_{0,4n}^*(e^{-x}) \leq 4n^{-4}$, $n \geq 1$.

Proof. It is easy to verify that $1 + x + x^2/2! + x^3/3! + x^4/4!$ has zeros only in the left hand plane. As far as we know this is the largest partial sum of e^x which has zeros only in the left half plane. Now using this in the proof of Theorem 3 of [1] instead of $1 + x + x^2/2!$, and by following the same approach we can get the required result.

We would like to point out now that the cases $n = 1, 2, 3$ of Theorem 5 follows from (12) and (14).

In the proof of Theorem 6 of [1], the following changes are necessary.

$$\text{Change } \frac{v^2}{2} \text{ to } \frac{v^2}{2.25}, \frac{1}{\binom{2m}{m} \sqrt{m}} \text{ to } \frac{1.9}{\binom{2m}{m} \sqrt{m}}, \text{ and } \frac{n}{\sqrt{m}} \text{ to } \frac{(1.9)n}{\sqrt{m}}.$$

Then we get for all $n \geq 8$, $\epsilon \geq e^{-5n^{2/3}}$. By choosing $A = 3n^{2/3}$, $m = [n^{2/3}]$, we get for $1 \leq n \leq 7$, $\epsilon \geq e^{-5n^{2/3}}$.

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TEMPLE UNIVERSITY
 AND
 THE INSTITUTE FOR ADVANCED STUDY, PRINCETON
 PRINCETON, NJ 08540

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William Allen Adkins, Aldo Andreotti and John Vincent Leahy, <i>An analogue of Oka's theorem for weakly normal complex spaces</i>	297
Ann K. Boyle, M. G. Deshpande and Edmund H. Feller, <i>On nonsingularly k-primitive rings</i>	303
Rolando Basim Chuaqui, <i>Measures invariant under a group of transformations</i>	313
Wendell Dan Curtis and Forrest Miller, <i>Gauge groups and classification of bundles with simple structural group</i>	331
Garret J. Etgen and Willie Taylor, <i>The essential uniqueness of bounded nonoscillatory solutions of certain even order differential equations</i>	339
Paul Ezust, <i>On a representation theory for ideal systems</i>	347
Richard Carl Gilbert, <i>The deficiency index of a third order operator</i>	369
John Norman Ginsburg, <i>S-spaces in countably compact spaces using Ostaszewski's method</i>	393
Basil Gordon and S. P. Mohanty, <i>On a theorem of Delaunay and some related results</i>	399
Douglas Lloyd Grant, <i>Topological groups which satisfy an open mapping theorem</i>	411
Charles Lemuel Hagopian, <i>A characterization of solenoids</i>	425
Kyong Taik Hahn, <i>On completeness of the Bergman metric and its subordinate metrics. II</i>	437
G. Hochschild and David Wheeler Wigner, <i>Abstractly split group extensions</i>	447
Gary S. Itzkowitz, <i>Inner invariant subspaces</i>	455
Jiang Luh and Mohan S. Putcha, <i>A commutativity theorem for non-associative algebras over a principal ideal domain</i>	485
Donald J. Newman and A. R. Reddy, <i>Addendum to: "Rational approximation of e^{-x} on the positive real axis"</i>	489
Akio Osada, <i>On the distribution of a-points of a strongly annular function</i>	491
Jeffrey Lynn Spielman, <i>A characterization of the Gaussian distribution in a Hilbert space</i>	497
Robert Moffatt Stephenson Jr., <i>Symmetrizable-closed spaces</i>	507
Peter George Trotter and Takayuki Tamura, <i>Completely semisimple inverse Δ-semigroups admitting principal series</i>	515
Charles Irvin Vinsonhaler and William Jennings Wickless, <i>Torsion free abelian groups quasi-projective over their endomorphism rings</i>	527
Frank Arvey Wattenberg, <i>Topologies on the set of closed subsets</i>	537
Richard A. Zalik, <i>Integral representation of Tchebycheff systems</i>	553