

Reverting to the general case, where  $f$  is arbitrary and  $g(y) = [y]$ , we obtain the formula

$$\sum_{f(a) < n \leq f(b)} f^{-1}(n) + \int_a^b [f(x)] dx = b[f(b)] - a[f(a)] \quad (7)$$

For example,  $\sum_1^{N^2} \sqrt{n} = N^3 - \int_0^N [x^2] dx$ .

So far we have only considered increasing functions. The reader may be interested in deriving and interpreting graphically the following equation:

$$\sum_1^N \frac{1}{n^s} + \int_1^{N^{-s}} [x^{-(1/s)}] dx = N^{1-s} - 1$$

I would like to record my indebtedness to my colleague Tom Power for references [4] and [8].

## References

- [1] B.M. Dean, *Integrating inverse functions*, IMS Bull. 19(1987), 82-83.
- [2] F.D. Parker, *Integrals of inverse functions*, Amer. Math. Monthly 62(1955), 439-440.
- [3] J.H. Staib, *The integration of inverse functions*, Math. Magazine 39(1966), 290-291, reprinted in [8].
- [4] J.R. Giles, *Real Analysis*, John Wiley & Sons, 1972; Ex. 4. p. 107, and pp. 162-164.
- [5] K. Kreith, *A geometric construction of composite functions*, Amer. Math. Monthly 69(1962), reprinted in [8].
- [6] L.M. Graves, *The Theory of Functions of Real Variables*, McGraw-Hill, 1956.
- [7] T.M. Apostol, *Mathematical Analysis*, Addison-Wesley, 1969.
- [8] T.M. Apostol et al. (ed.), *Selected Papers on Calculus*, MAA, 1969.

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## CONFERENCES

### Operator Theory and Operator Algebras University College Cork

The Third Annual Conference on Operator Theory and Operator Algebras will be held in University College Cork, from Wednesday 29th June to Saturday 2nd July, 1988. The principal speakers will include

I.D. Berg (Illinois)  
L. Brown (Purdue)  
L. Cuntz (Marseille)  
Z. Slodkowski

Further information can be obtained from the organizers:

G.J. Murphy & R.E. Harte  
Department of Mathematics  
University College  
Cork, Ireland.

### Conference on Functional Analysis El Escorial, Spain

A Conference on Functional Analysis will be held in El Escorial, Madrid, from June 13 to 18, 1988. The Organising Committee consists of J. Ansemil, F. Bombal and J.G. Llavona.

It is expected that the main speakers will include R. Aron, K.D. Bierstedt, J. Diestel, J.M. Isidro and M. Valdivia.

Further information can be obtained from

Departamento de Análisis Matemático  
Facultad de Matemáticas  
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### Groups In Galway 88

It has been decided to celebrate the tenth anniversary of this meeting by adding an extra day to the usual (two-day) format. The 1988 meeting will commence after lunch on Thursday May 26 and conclude after lunch on Saturday May 28.

Among the speakers will be Laci Kovacs and Mike Newman, both from ANU, Canberra. Any enquiries should be addressed to:

Dr. J. McDermott  
Groups in Galway 88  
Department of Mathematics  
University College Galway  
Galway, Ireland.

### Real Analysis Symposium, Coleraine

A Symposium on Real Analysis will take place in Coleraine From August 9th to 12th, 1988.

The main speakers will include P. Bullen (British Columbia), G. Cross (Waterloo, Ontario), R. Henstock (Ulster), J. Kurzweil (Prague), P.Y. Lee (Singapore), J. Mawhin (Louvain), W. Pfeffer (California Davis) and C.A. Rogers (U.C. London).

Further details can be obtained from:

P. Muldowney  
Magee College  
Derry, Northern Ireland

## BOOK REVIEWS

MATHEMATICS AND OPTIMAL FORM by Stefan Hildebrandt and Anthony Tromba

Scientific American Books, 1985, xvi+215pp. ISBN 0-7167-5009-0

"Namely, because the shape of the whole universe is most perfect and, in fact, designed by the wisest creator, nothing in all the world will occur in which no maximum or minimum rule is somehow shining forth."

*Leonhard Euler*

This quotation from Euler illustrates the depth of the current connecting mathematics with the search for an understanding of the origin, purpose and structure of the world. One of the oldest examples of the search for a unifying principle is that of Xenophanes (about 565-470 BC) who established the existence of a unique God, who is necessarily spherical, by an argument from homogeneity. More recently, we have the string theories of particle physics which seek to derive all four fundamental forces of nature by considering Riemann surfaces embedded as minimal surfaces in a ten-dimensional space-time.

The authors of this book are well-known for their work on variational problems in partial differential equations, and particularly on minimal surfaces. Thus they have a professional interest in soap films, where fascinating photographs of complex bubbles go hand in hand with hard analysis, *a priori* estimates, and novel geometric constructs.

The book appears in the excellent Scientific American Library series, and therefore raises hopes that are not entirely filled in this case. There are lots of entertaining anecdotes and quotations, and many interesting pictures. There is an impressive variety of examples of extreme behaviour and extremal principles. What is missing is the unfolding of a logical argument, or a series of deepening insights such as is offered by some other books in the collection such as Weinberg: "The Discovery of Subatomic Particles", and Atkins: "The Second Law". Also, there is an inclination to include material which, while of considerable interest, is not closely relevant to the main theme. For example, a