Numerical Calculus

Differentiation and Integration

...just the color figures for those who got the B&W printed book...

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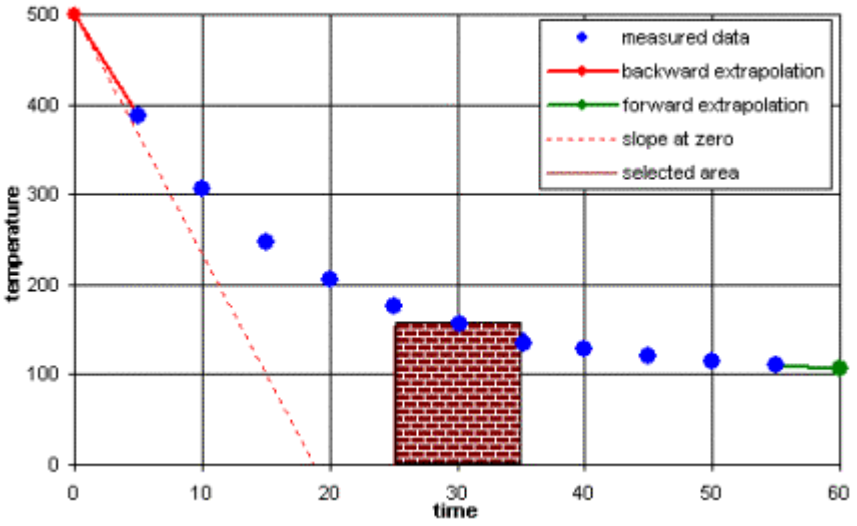
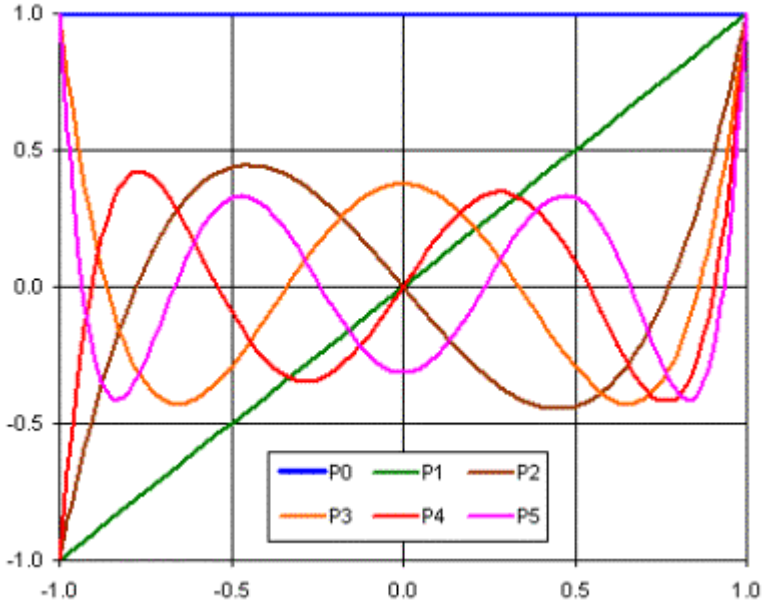
Foreword

Before the advent of sophisticated programs capable of performing calculus symbolically, numerical differentiation and integration provided a means of solving seemingly intractable equations. Numerical methods can still be an efficient means of solving many such problems, but the real advantage of *Numerical Calculus* will always be in solving those problems that have no closed-form solution—and these are legion. This book is filled with practical examples, code, and spreadsheets. I trust you will find it useful. I assume that you already have a command of analytical calculus and so I will jump right in to the numerical.

All of the examples contained in this book,
(as well as a lot of free programs) are available at…
http://www.dudleybenton.altervista.org/software/index.html

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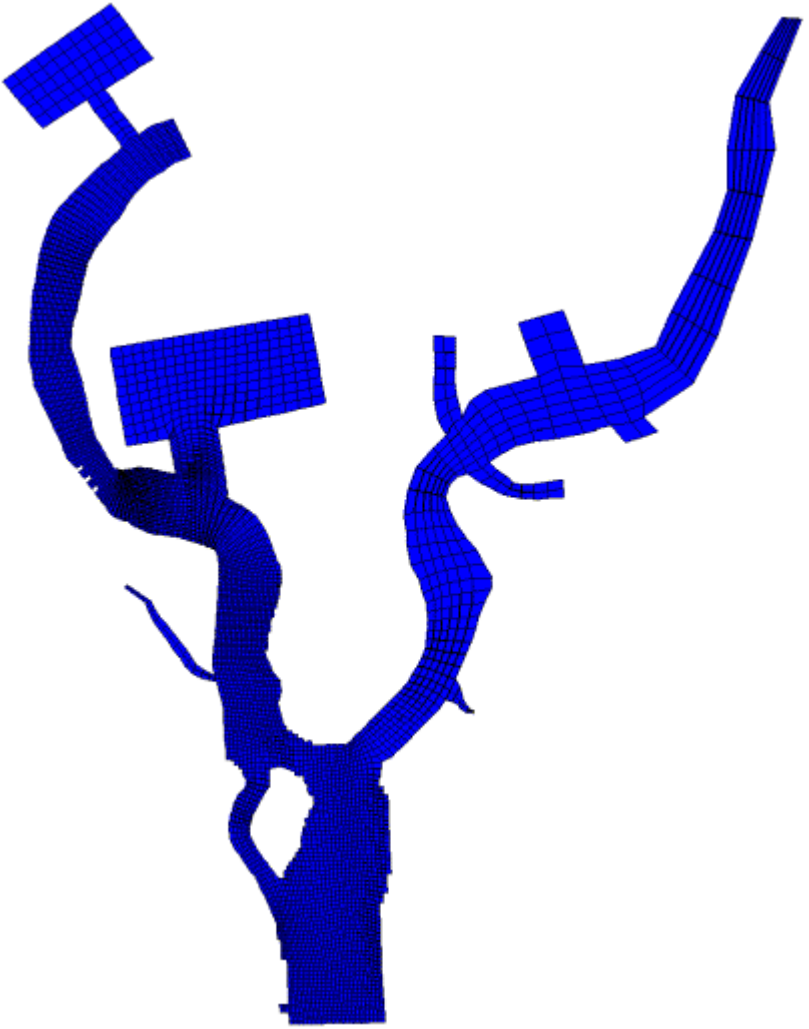
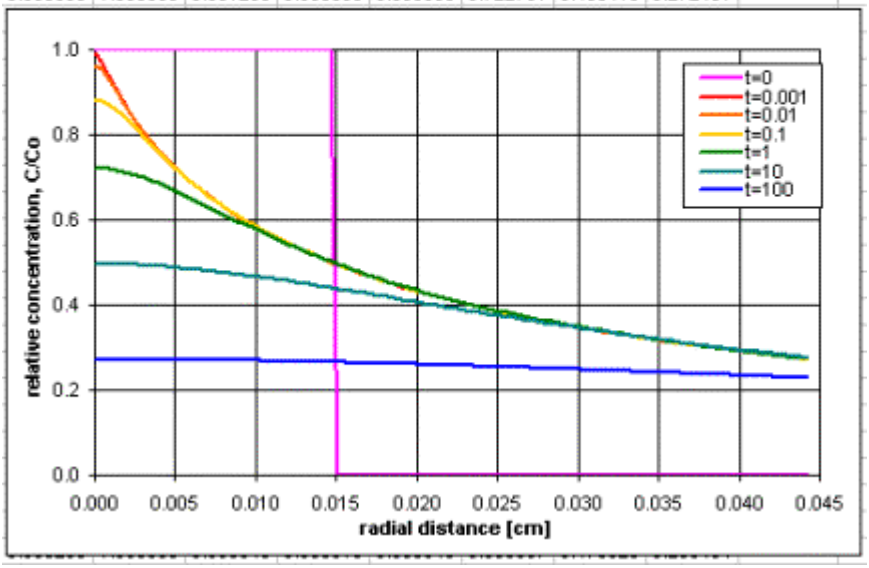
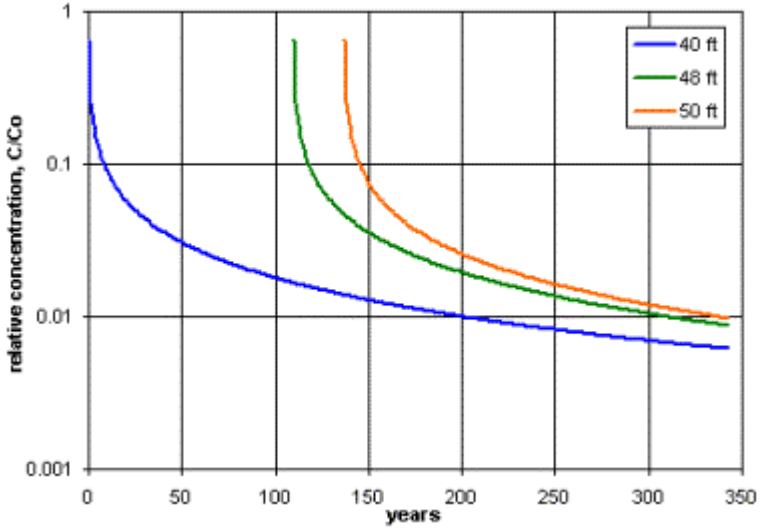
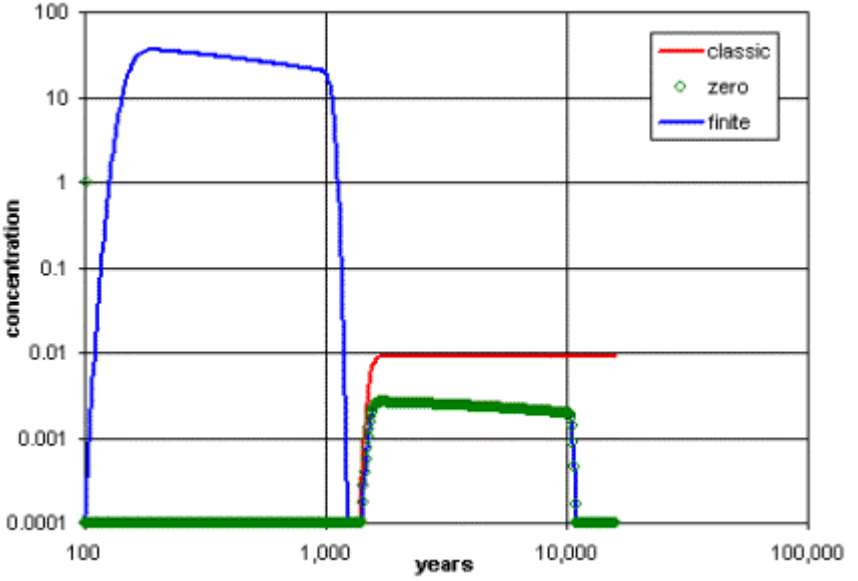


diffusion through a granulated media

radius	relative concentration, C/Co, at various times						
cm	t=0	t=0.001	t=0.01	t=0.1	t=1	t=10	t=100
0.000000	1.000000	0.991233	0.963563	0.883600	0.722751	0.496415	0.272451






100
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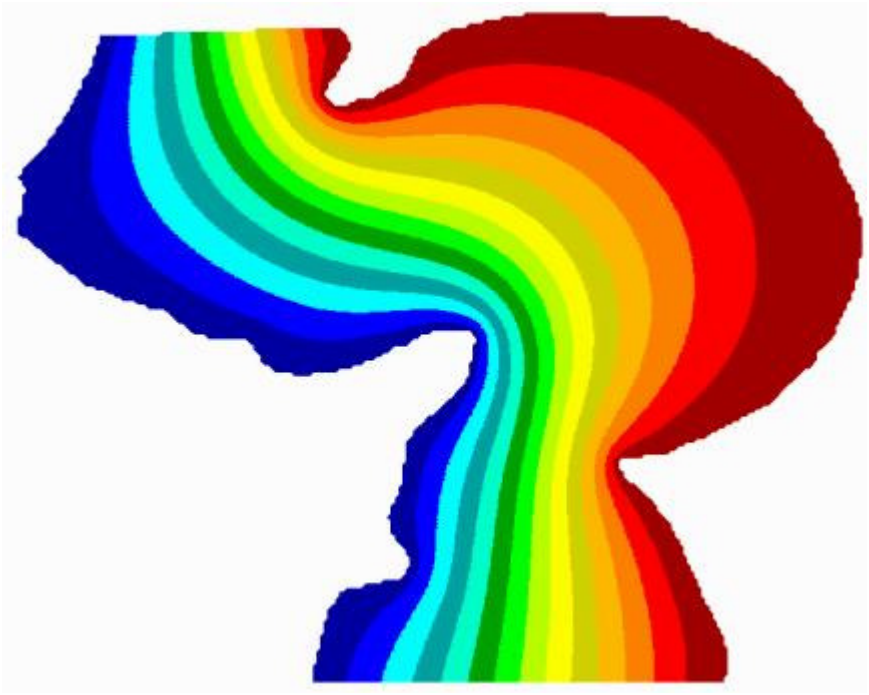
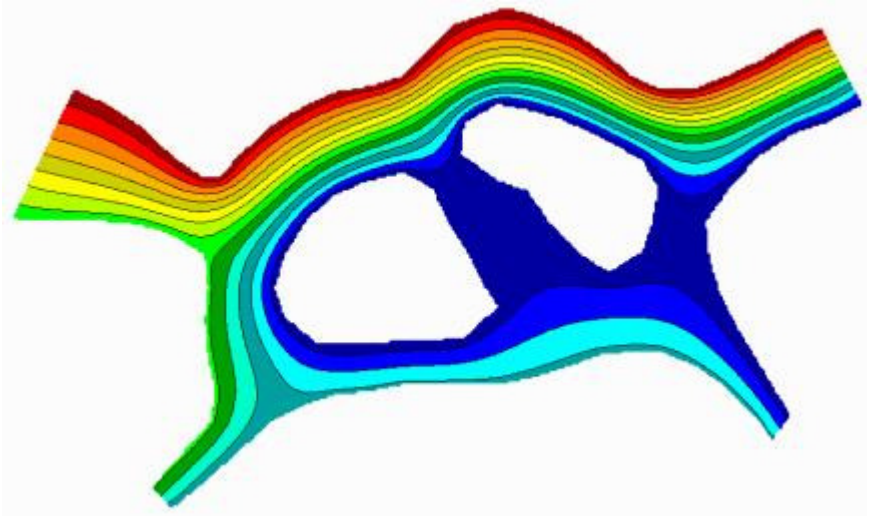
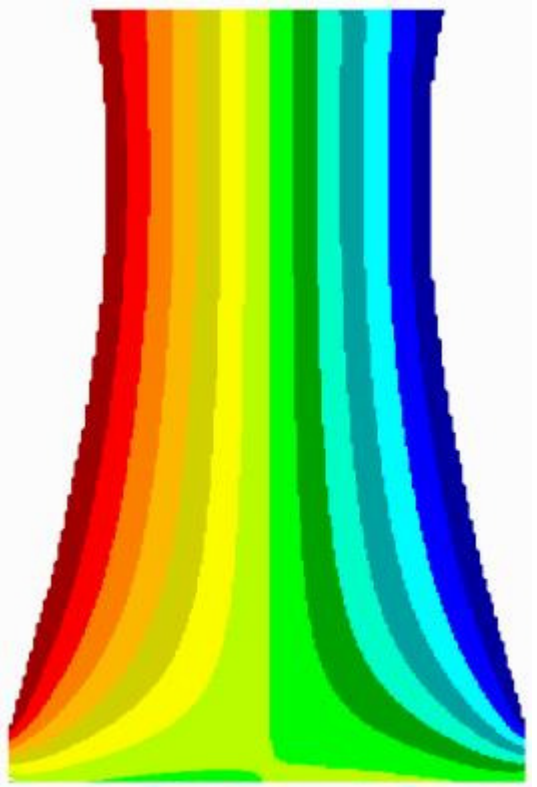
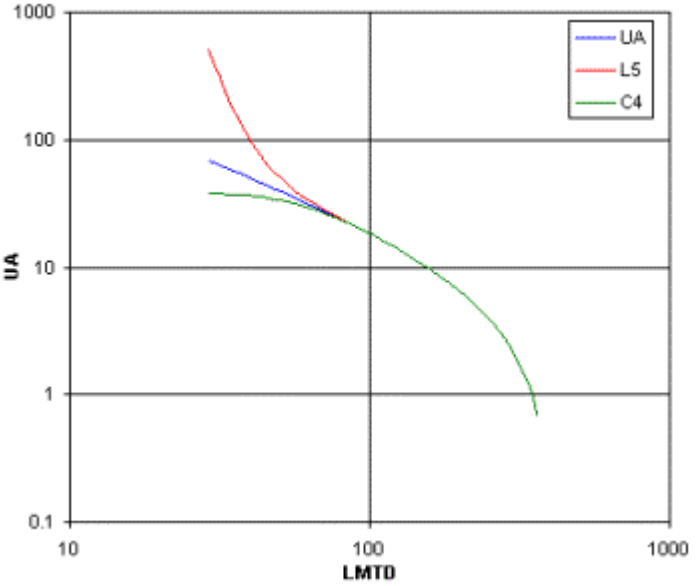
finite





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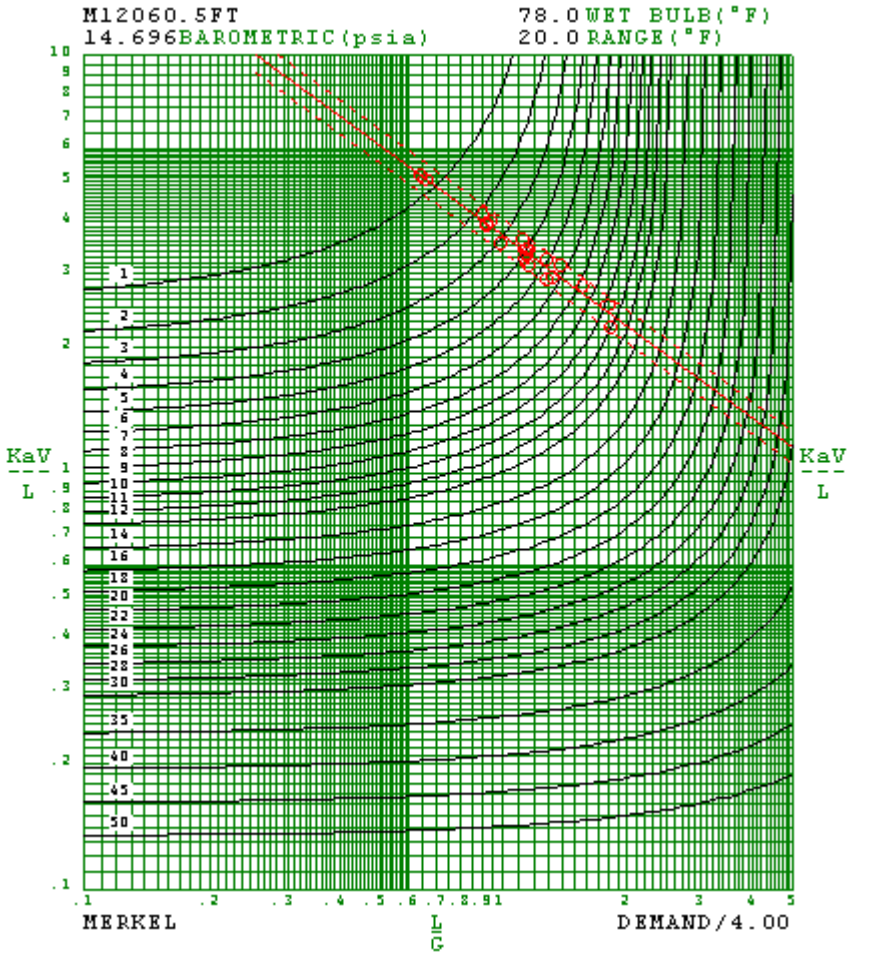
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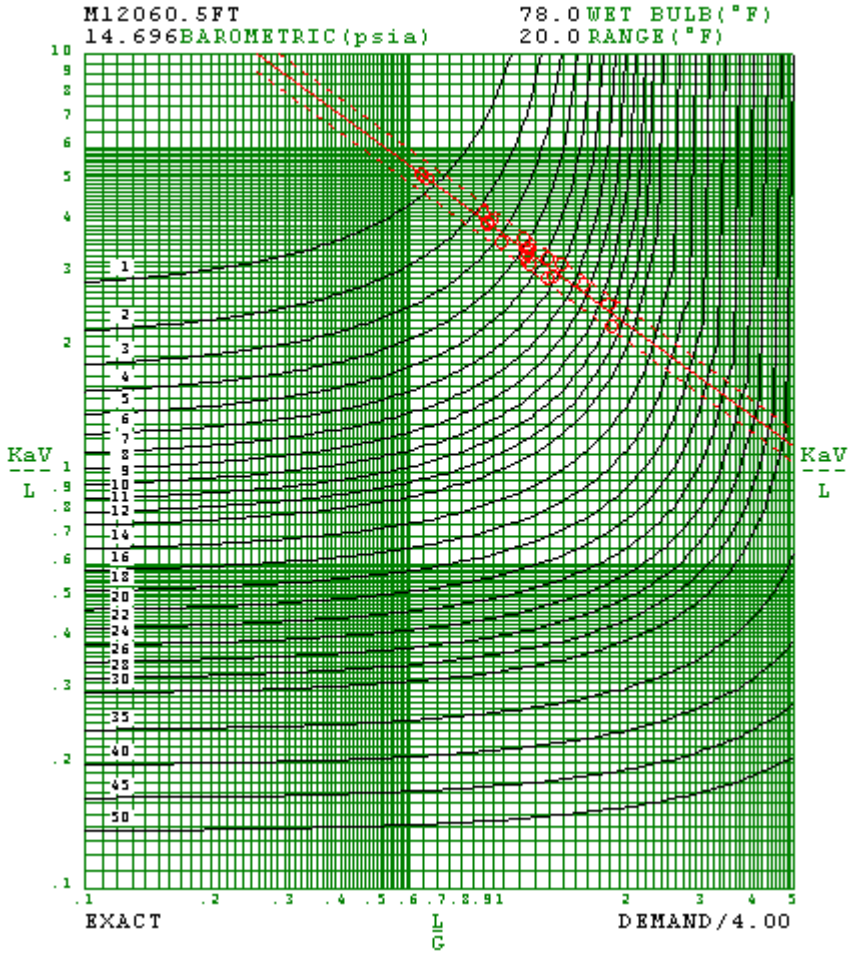
14.696 BAROMETRIC(psia)
20.0 RANGE(°F)
KaV/L
KaV/L
MERKEL
L/G
DEMAND/4.00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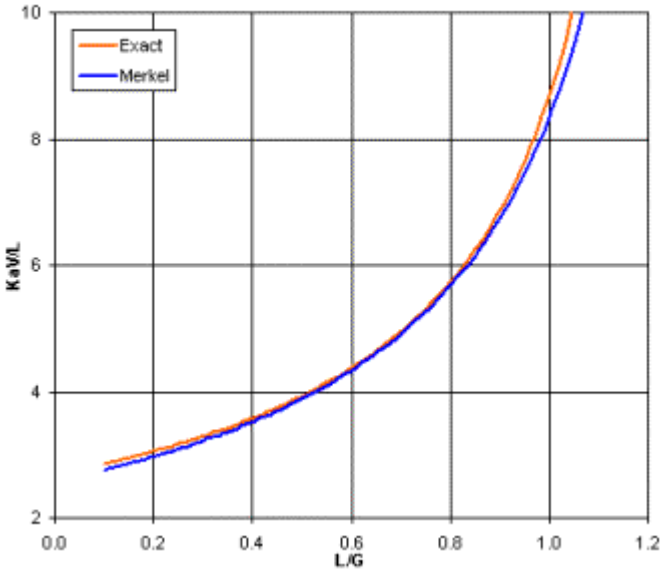
20.0RANGE(°F)
KaV / L
KaV / L
EXACT
L / G
DEMAND/4.00


Exact
Merkel
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L/G
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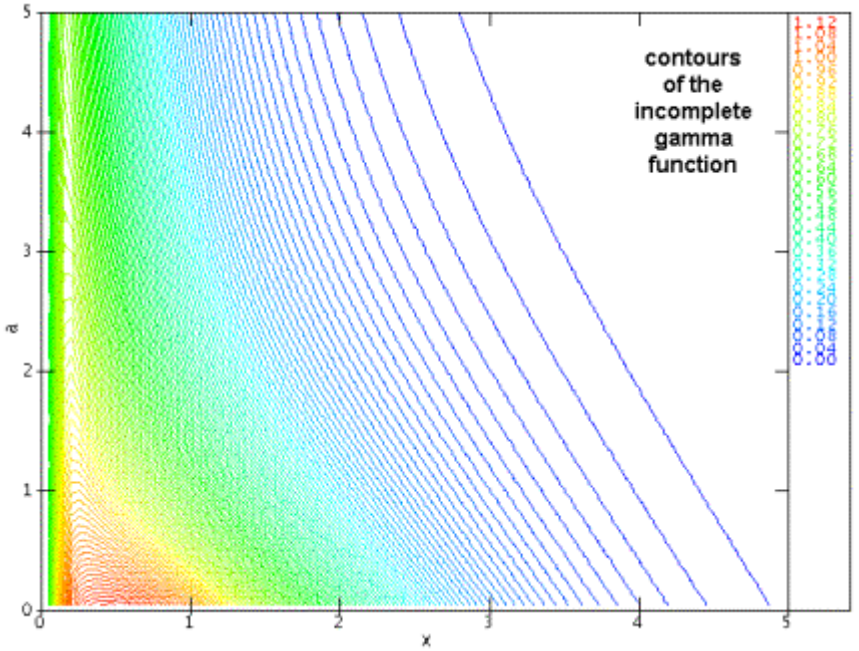
contours
of the
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