Re: after beginner's algebra, where to?

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- *Date*: 20 May 2006 06:52:31 −0700

Rufi_Dukes wrote (in part):

> title: algebra demystified, (part of a series in which, so far,
> astronomy, calculus and physics have all been "demystified"
>
> authrhonda huettenmueller,
> published by mcgraw−hill, 2003
>
> chapters i've worked through:
> 1.fractions
> 2.into to variables
> 3.decimals
> 4. negative numbers
> 5. exponents and roots
> 6. factoring
> 7 linear equations
> 8 linear applications
>
> chapters still to go:
> 9. linear inequalities
> 10. quadratic equations
> 11. quadratic applications
>
> i'm middle−aged, highly motivated, with no time−constraints,
> having taken a couple of years out from teaching; i plan to
> spend the rest of this year (and next year if necessary)
> laying the foundations for university level study of maths

[and, in a later post]

> forgot to ask:
> do you think that what i outlined in my original post,
> giving the contents of the algebra book that i'm using,
> that this would correspond to algebra 1? 11? 111?

What you're describing is (U.S.) Algebra 1, or at least what used to be called Algebra 1. [With the push (in the U.S.) for all students to take algebra in high school, and with many students taking it in the 8'th grade, it's possible that "Algebra 1" means less than it used to.]

What you need next, after you finish Chapters 9−11 and before trigonometry/precalculus, is a thorough study of high school geometry and Algebra 2.

I'm not sure what to suggest in the way of texts, because texts at this level are often hard to find (libraries, bookstores, etc.) after a few decades, and most of the books I have at this level are several decades old.

However, the "Maths In Action" series put out by Nelson Thornes Publishers seemed very interesting when I looked at the table of contents of some their texts:

http://books.google.com/books?q=maths−in−action
http://www.nelsonthornes.com/secondary/maths/marketing/books_mia.htm

One thing I'd strongly recommend is that you get a copy of Gelfand/Shen's "Algebra" (details below). It's $22.95 from amazon.com in (medium−sized) paperback and should be excellent for someone with your background and intentions. There are other books on high school topics by these authors, which are easy to find out about, but I believe their algebra book is their lowest level book. I would describe their algebra book as a non−bloated treatment of many Algebra 2 and College Algebra topics that places a lot of attention on concepts and higher order thinking skills important for later success in mathematics.

Israel M. Gelfand and Alexander Shen, "Algebra", Birkhauser, 1993, viii + 149 pages. [QA 152.2G45]
ISBN 0−8176−3677−3
http://www.amazon.com/gp/product/0817636773/102−5050732−5848137
http://books.google.com/books?vid=ISBN0817636773
http://groups.google.com/group/sci.math/msg/a3abc40a1fcc7490

You might also find some "popular math" books intellectually profitable to you at this point. At the very low level, well within your reach now, are two books by Isaac Asimov that most public libraries have. (Well, in my experience. One amazon.com reviewer for the algebra book mentioned a case where the book was missing, which they speculated on account of how good it is.)

Isaac Asimov, "Realm of Numbers", 1959.
Isaac Asimov, "Realm of Algebra", 1982.
http://www.amazon.com/gp/product/0395065666/102−3567762−3676143

http://www.amazon.com/gp/product/0449243982/102−3567762−3676143

At a slightly higher level is the following, which would be
good for rounding out your knowledge of some ideas and concepts
that will help in calculus, but which (because of space
considerations) are often neglected in textbooks.

Rózsa Péter, "Playing With Infinity: Mathematical Explorations
and Excursions", translated by Z. P. Dienes, Dover Publications,
1961/1976, xiv + 268 pages.
ISBN 0−486−23265−4
http://www.amazon.com/gp/product/0486232654/102−5050732−5848137
http://books.google.com/books?vid=ISBN0486232654

Péter's book makes some isolated use of complex numbers and
very simple trigonometry in two or three pages at one point,
but otherwise I think you probably have the background now to
understand most of it.

For what it's worth, I pretty much taught myself pre−algebra
through multivariable calculus, linear algebra, and differential
equations (exclusive of geometry) in three years (ages 14−16),
so I have some experience in learning math outside the
classroom (before graduate school that is, since after your
first or second year in graduate school, most of what you'll
learn will be outside the classroom).

Dave L. Renfro

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