

# Introduction

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One of the most commonly asked questions in a mathematics classroom is, “What will I ever use this for?” Some teachers can give a good, convincing answer. Others hem and haw and stare at the floor. My favorite answer is, “Algebra gives you *power*.” Algebra gives you the *power* to move on to bigger and better things in mathematics. Algebra gives you the *power* of knowing that you know something that your neighbor doesn’t know. Algebra gives you the *power* to be able to help someone else with an algebra task or to explain to your child these logical mathematical processes.

Algebra is a system of symbols and rules that is universally understood, no matter what the spoken language. Algebra provides a clear, methodical process that can be followed from beginning to end. What *power!*

## About This Book

What could be more *essential* than *Algebra I Essentials For Dummies*? In this book, you find the main points, the nitty-gritty (made spiffy-jiffy), and a format that lets you find what you need about an algebraic topic as you need it. I keep the same type of organization that you find in *Algebra I For Dummies*, 2nd Edition, but I keep the details neat, sweet, and don’t repeat. The fundamentals are here for your quick reference or, if you prefer, a more thorough perusal. The choice is yours.

This book isn’t like a mystery novel; you don’t have to read it from beginning to end. I divide the book into some general topics — from the beginning vocabulary and processes and operations to the important tool of factoring to equations and applications. So you can dip into the book wherever you want, to find the information you need.

# Conventions Used in This Book

I don't use many conventions in this book, but you should be aware of the following:

- ✓ When I introduce a new term, I put that term in *italics* and define it nearby (often in parentheses).
- ✓ I express numbers or numerals either with the actual symbol, such as 8, or the written-out word: *eight*. Operations, such as + are either shown as this symbol or written as *plus*. The choice of expression all depends on the situation — and on making it perfectly clear for you.

# Foolish Assumptions

I don't assume that you're as crazy about math as I am — and you may be even *more* excited about it than I am! I do assume, though, that you have a mission here — to brush up on your skills, improve your mind, or just have some fun. I also assume that you have some experience with algebra — full exposure for a year or so, maybe a class you took a long time ago, or even just some preliminary concepts.

You may be delving into the world of algebra again to refresh those long-ago lessons. Is your kid coming home with assignments that are beyond your memory? Are you finally going to take that calculus class that you've been putting off? Never fear. Help is here!

# Icons Used in This Book

The little drawings in the margin of the book are there to draw your attention to specific text. Here are the icons I use in this book:



To make everything work out right, you have to follow the basic rules of algebra (or mathematics in general). You can't change or ignore them and arrive at the right answer. Whenever I give you an algebra rule, I mark it with this icon.



An explanation of an algebraic process is fine, but an example of how the process works is even better. When you see the Example icon, you'll find one or more problems using the topic at hand.



Paragraphs marked with the Remember icon help clarify a symbol or process. I may discuss the topic in another section of the book, or I may just remind you of a basic algebra rule that I discuss earlier.



The Tip icon isn't life-or-death important, but it generally can help make your life easier — at least your life in algebra.



The Warning icon alerts you to something that can be particularly tricky. Errors crop up frequently when working with the processes or topics next to this icon, so I call special attention to the situation so you won't fall into the trap.

## Where to Go from Here

If you want to refresh your basic skills or boost your confidence, start with the fractions, decimals, and signed numbers in the first chapter. Other essential concepts are the exponents in Chapter 2 and order of operations in Chapter 3. If you're ready for some factoring practice and need to pinpoint which method to use with what, go to Chapters 4 and 5. Chapters 6, 7, and 8 are for you if you're ready to solve equations; you can find just about any type you're ready to attack. Chapters 9 and 10 get you back into inequalities and absolute value. And Chapters 11 and 12 are where the good stuff is: applications — things you can do with all those good solutions. I finish with some graphing in Chapter 13 and then give you a list of pitfalls to avoid in Chapter 14.

Studying algebra can give you some logical exercises. As you get older, the more you exercise your brain cells, the more alert and “with it” you remain. “Use it or lose it” means a lot in terms of the brain. What a good place to use it, right here!

The best *why* for studying algebra is just that it's beautiful. Yes, you read that right. Algebra is poetry, deep meaning, and artistic expression. Just look, and you'll find it. Also, don't forget that it gives you *power*.

Welcome to algebra! Enjoy the adventure!

# The 5<sup>th</sup> Wave

By Rich Tennant

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RONNY HAD THE SIZE AND SPEED  
BUT NOT THE KNOWLEDGE OF  
GRAPHING QUADRATIC EQUATIONS  
TO PLAY REALLY GREAT FOOTBALL

Okay—picture a Cartesian  
coordinate system. Ronny,  
you're  $x^2 + 2x + 3$ ; Doug,  
you're  $ax^2 + bx + c$ ...

DANG!

