

## Introduction to three new math methods for solving equations and inequalities co-authored by Nghi H. Nguyen, a Vietnamese American

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The new methods are explained in three new math textbooks titled:

- “Solving math quadratic equations & inequalities” (Dorrancepublishing.com),
- “Linear equations, inequalities, & functions” (Trafford.com),
- “Trigonometry: Solving trigonometric equations & inequalities” (Trafford.com).

These books are being sold online at the publisher’s website and on Amazon.com. To find them, log into the above mentioned websites, Amazon.com or Google, then type in exactly the author’s name or the book’s title. The authors are San Jose, California, high school math teachers and tutor, Wendy Lawson, Karen Kusanovich, and Nghi H. Nguyen, a Vietnamese American.

There are three innovative features in these books that make them very different from other high school math books. These books have been posted for online sale on more than 150 domestic and international bookseller websites.

As first feature, the first book introduces a new math method, called the Diagonal Sum Method, to quickly solve a quadratic equation.

In existing algebra math books, there are two most common methods to solve a quadratic equation which is in the standard form  $ax^2 + bx + c = 0$ . The first method uses the quadratic formula. The second method solves the quadratic equation by using the trial-and-error factoring approach. To factor a quadratic equation, students have to mentally guess the values of four constants in two binomials in  $x$  that make the equation true. Practically, most of the students who do not have a good memory and sharp mental math ability feel uncomfortable in guessing the right constants because there are many permutations involved.

The newly copyrighted method, presented in the first book, uses an innovative concept, not developed in other math books, which is to find two **fractions** knowing their **sum** and their **product**. The book sets up easy instructional steps for a student, with average mental math ability, to learn how to solve a quadratic equation quickly. This method offers the advantage of giving the real roots of the equation directly, without having to factor it. It is very fast and convenient when the constants  $a$ ,  $b$ ,  $c$ , are big/odd numbers. This new method can replace the factoring method since it is faster, more convenient, and it can be applicable whenever the given quadratic equation is factorable. .

The second innovative feature introduces a copyrighted new method for solving a **system** of linear/quadratic inequalities in one variable by using a new **number line** technique. The existing method, taught in worldwide high school algebra classes, asks students to picture the solution set of both inequalities on the **same** number line with confusing cross marks drawn in different directions. The new method, separately picturing both solution sets on a **double number line** and using the **superimposing technique**, will help students easily visualize the solution set of the system. A **triple number** line may be used for a system of three inequalities if the solution set can be easily seen.

The third innovative feature introduces a copyrighted new method for solving linear or quadratic inequalities by **graphing of functions**. Graphic methods have always been more convenient than algebraic methods in math problem solving since students can visualize the solution. In this direction, the books develop a graphic method to solve inequalities and systems of inequalities in one variable by considering the relative position of the function's graph with respect to the x-axis. The consequences of this innovative method are amazingly useful. High school students, after learning this method and with the help of graphing calculators, will be able to solve **various types** of inequalities and **complex systems** of inequalities much more easily than using algebraic manipulation. Besides linear and quadratic forms, various inequalities in one variable may include cubic, bi-quadratic, rational, radical, exponential and trigonometric **inequalities**. This new method which consists of reading graphs, analysis and making conclusion would fulfill the true purpose of high school math teaching.