STRENGTH in NUMBERS
tutoring and test prep

STRENGTH IN NUMBERS BRIDGE CLASS

PRECALCULUS - ADVANCED ALGEBRA AND TRIGONOMETRY

TEXTBOOK - *PRECALCULUS: MATHEMATICS FOR CALCULUS*, BY JAMES STEWART, LOTHAR REDLIN, AND SALEEM WATSON. FIFTH EDITION.

Welcome to the class! Before you are ready to study calculus, you need to learn some more advanced algebra techniques. This class is designed to teach those techniques. We will focus very heavily on graphing and the idea of a "function," something which will probably be familiar to you from prior algebra classes.

The problem with "precalculus" is that its title makes it sound like everything in it is important for learning calculus. Frankly, this isn't true. Some topics typically included in precalculus have no relevance to calculus at all; they're interesting and good to learn about, but not really a preparation for success in calculus. Since this class is going to be somewhat brief, we will skip the topics unimportant for calculus and will focus on the ones you'll need to know for higher study. The ones we'll focus on are usually considered the "hard" ones anyway, so you shouldn't have a problem mastering the extra ones that might come up when you take this class in school.

You will need to work hard to succeed in this class, but it's doable for someone who wants to do well. **Although you should bring a calculator to every class, we won't use it very often**. This is because most of our work will actually involve being able to make conclusions based on our own thoughts instead of needing to rely on technology. For some busy-work style tasks, or when we want to get something done really fast that isn't important for understanding the topics we're learning, we will use a calculator.

Below is the list of topics we will cover in each class, together with the corresponding book section. Based on your needs, homework problems will be assigned each class.

Class number	Topics	Book Sections
1	Transformations of functions; polynomial functions and graphs	2.4, 3.1
2	Polynomial functions and graphs cont'd; dividing polynomials (long and synthetic division); real zeros of polynomials; multiplicity	3.1, 3.2, 3.3
3	Complex numbers; conjugate pairs; complex numbers and polynomial division	3.4, 3.5
4	Rational functions; asymptotic behavior; "helper graphs"	3.6
5	Introduction to logarithms; exponential and logarithmic functions	4.1, 4.2
6	Laws of logarithms; algebra with logarithms; exponential and logarithmic equations	4.3, 4.4
7	Review of right-triangle trig; intro to unit circle; trig functions of real numbers	5.1, 5.2
8	Trig graphs; general catch-up	5.3, 5.4

Class number	Topics	Book Sections
9	Intro to trig identities; Pythagorean identity; angle addition and subtraction identities	7.1, 7.2
10	Double- and half-angle identities; sum-product identities	7.3
11	Inverse trig functions; solving trigonometric equations	7.4, 7.5
12	Introduction to limits; finding limits algebraically; tangent lines and derivatives (optional - time permitting)	12.2, 12.3