

Pre-Calculus (Advanced Math)
Syllabus as of 2010-02-28

Tuesdays 8:30–9:30 a.m.

Grade Level: 10 – 12 (Pre-Requisite: Algebra II)

Teacher: Mr. David A. Wheeler 703 – 250 - 7047 dwheeler at dwheeler.com (“math” in subject)

Website: <http://www.dwheeler.com/advmath> Student Fee: \$0 Class Size: <12

This math course will cover mathematical concepts beyond Algebra II so students will be ready for Calculus. Topics include exponentials, logarithms, complex numbers, equations & inequalities (inc. systems of equations & inequalities), functions, lines (inc. slopes), polynomials (inc. the quadratic equation), geometry, basic matrix operations, trigonometry, word problems, basics of statistics and probability, and proofs.

Each class will introduce the most important and harder-to-understand concepts that will be coming up in the lessons (4 lessons each week), explaining them and working through examples in class. Students will also be able to ask questions about the past or current week. We'll skip lessons 1-9 and test 1, which should be simply review. **Students are highly encouraged to start math two weeks before class**, so that they can go through lessons 1-8 in those weeks and lesson 9 on Monday. The first class will begin by covering lessons 10-13. On the second class, please turn in your first weekly test (test #2 covering lessons 5-8), which won't be counted but will be good practice. **Students: Please go through lessons 1-9 before the first day of class.**

Expected of Students: Students, you will be expected to spend about five hours a week outside of class (less is fine, if you learn the material; if it's often much more, I worry that you won't have time to do your other work). You'll be expected to complete four lessons and a test each week. The suggested schedule is to complete a lesson each day on Monday through Thursday, and a test on Friday. The test will cover the previous week's material, while classes will cover upcoming material (i.e., that Tuesday through the following Monday). To complete a lesson, read the material and do the odd-numbered problems. Feel free to do more problems if it helps, or do less if you're absolutely certain you understand the material; the point is to *learn* the material. The class meeting is to *aid* and *not to replace* your self-study. You will need to stay on the class schedule, take tests at home (on time!) and turn in your weekly tests that Sunday (in the co-op mailbox labeled “HEA tests”, bottom right under the foyer). The tests are closed-book and should take about an hour, but you can take up to three hours if you really need it.

Expected of Parents: Parents, you will be expected to ensure that your students are doing the lessons, as well as administering and initially grading the tests (please identify which are correct and incorrect). The teacher will then examine them to give partial credit (and help identify what went wrong), give full credit for alternative correct forms, and compute the final grade. Please facilitate getting the completed tests into the co-op mailbox on Sunday. Your student may have questions during the week – please help them, or encourage them to get help from the teacher (email welcome!) or a fellow classmate. Some students have questions but do not take advantage of the class time to ask their questions; please encourage your student to ask questions in class and get help when they are confused. Call or email the teacher, if you need to – that's why he's here!

Grading and Tests: The final grade will be calculated by dropping the worst 4 weekly tests and then averaging the remainder. Tests 1 and 2 won't count. No separate midterm or final is planned.

Required Curriculum: “Advanced Mathematics: An Incremental Approach” by John H. Saxon, 2nd edition (1996), along with its “Solutions Manual”. Parents must also acquire the Test Forms and Home Study Packet. Other useful materials are available but aren't required, e.g., the DIVE CDs.

As noted above, the first class will cover lessons 10-13; it will also briefly cover what is mathematics, and why study mathematics. We will then cover 4 lessons per week for the entire book (through lesson 125). The last classes will be a very brief introduction to calculus (limits, differentiation, and integration), so that those who go on to calculus will be better prepared.

Assistance: I welcome emails from students or their parents asking for help! Please send them to dwheeler at dwheeler.com. Please include “math” somewhere in the subject line, so that I'll know it's not spam.