# AMC Beginner Course Introduction:

## 1. IntendedAudience

This class is intended for high school students who are interested and talented in math. In some cases middle school students who are enrolled in the Howard County accelerated math program will find the class useful, as well. In general, it is expected that the students have finished Algebra I, Geometry, and are at least learning Algebra II. The class will also cover some materials in trigonometry and complex numbers. The materials discussed in the class are usually more advanced and involved than those taught in high school classrooms. And this class will focus more on problem solving skills and mathematical thinking, rather than concepts and basic operation rules as in high school classrooms.

The majority of the lectures are mutually independent. You don't have to understand one to understand the next one. Therefore, if one lecture covers material that you have not learned in school, it would be OK to skip it.

## 2. ReferenceBooks

You don't have to buy these books for the class. However, the class materials are mainly from these books.

Fall semester: "First Steps for Math Olympians" by J. Douglas Faires. All problems used in this book are from actual AMC tests. The book contains solutions to the problems.

Spring semester: "The Art of Problem Solving Vol. 2", by Richard Rusczyk and Sandor Lehoczky. Solutions to problems are in a separate book.

## 3. Overview of AMCCompetitions

You don't have to join the competition in order to take and benefit from this class. On the other hand, AMC competitions are good experiences for the students.

- The AMC 12 covers high school mathematics, and is for students in high school who are under 19.5 years of age. The AMC 10 covers mathematics normallyassociated with grades 9 and 10, and is for students under 17.5 years of age who are not enrolled in grades 11, 12, or equivalent. Both contests are given in a convenient 75-minute interval, are 25 questions in length, with approximately 12 questions common to both contests. The problems are progressive in levels ofdifficulty.
- More information athttp://amc.maa.org/
- Past problems are collected in books. Forexample:
    - "The Contest Problem Book VII: American Mathematics Competitions, 1995-2000 Contests" byHarold BraunReiter.
    - "The Contest Problem Book VIII: American Mathematics Competitions (AMC 10) 2000-2007" byJ. Douglas Faires and David Wells
    - "The Contest Problem Book IX: American Mathematics Competitions (AMC 12) 2001-2007" byDavid Wells and J. DouglasFaires
- Sample problems are provided in the brochures, which are available at http://amc.maa.org/a-activities/a7- problems/problem81012archive.shtml. I'll be happy to share past testing problems that I havecollected.
- The AMC competitions are organized through schools. Please ask your math teacher about how to participate. They are held in January/February timeframe.
- Top scorers of AMC 10 and AMC 12 are qualified for American Invitational Mathematics Examination(AIME). Qualification for AIME can be helpful in college applications. Top scores of AIME are qualified for USA Mathematical Olympiad(USAMO).

## 4. AdditionalResources:

Arts of Problem Solving: http://www.artofproblemsolving.com/This place has on-line math lessons, math books and a bulletin board for math students.

More resources can be found here: http://www.princetonmathcircle.org/Links.html

The Math League: http://www.themathleague.com/ It has competitions for all grade levels. The online store sells books with past competition problems.