

MATH 7 CLASS: INFORMATION FOR STUDENTS AND PARENTS

Math 7 is one of the classes of the Stony Brook SchoolNova enrichment program. It is intended for children who are in grades 7-8. The instructor of this class is Andrei Antonenko (antonenko@schoolnova.org). If you have any questions, do not hesitate to ask me after the class or by email.

You can find some information about this class, including homework assignments, on our web page: www.SchoolNova.com

WHAT MATERIAL WILL BE COVERED?

In this course I plan to study the following topics:

- Combinatorics: choosing with and without repetitions. Pascal triangle; formula for nCk
- Vectors and operations with them (in coordinates).
- Basic trigonometry (definition of sin, cos). Law of sines.
- Transformation of the plane. Reflections, rotations, and their compositions.
- Quadratic equation. Quadratic formula, Viète/Vieta formula. Parabola.
- Fibonacci numbers

At the beginning of the year, during the first two classes, we will review the previous material.

In addition, as usual, we will also solve a number of interesting problems from all areas of mathematics.

Some emphasis will be placed on teaching kids to solve problems which, while they do require some knowledge of basic topics, are not straightforward exercises but require some creativity. Think of “puzzles” or “brain-teasers”. It does not necessarily mean that such problems are more difficult than usual textbook exercises, but they definitely will be more interesting. We will solve problems working collectively in class; more problems will be given as homework exercises. Most of these problems will be tied to the topics listed above, but there will also be problems which are not directly related but are interesting enough to be discussed anyway.

We will also solve some interesting problems from math olympiads, such as Math Kangaroo and AMC 8. AMC 8 will take place on November 14, 2017, and Math Kangaroo will take place on March 15, 2018.

MATERIALS

The handouts containing the assignments and sometimes the basic theory will be given each class. In addition, each student will need a binder, notebook, and a pencil.

HOMEWORKS

I will assign weekly homework. They are **extremely important** for understanding the material: it is common that some new idea or method is presented to students as a series of homework problem. Thus, it is vital that the students do the homework. The homework should take about 1 to 2 hours.

Note that each homework has problems of varying difficulty. It is not expected that each student can do all of them, so do not worry if your child cannot solve some problems.

GRADES

This is easy — there will be no grades. I'll give some distinction to kids who are doing particularly well in class, and I'll personally talk to the parents of children who are not doing well — but other than that, there will be no grades.