As you might suspect, the mechanism of entering a university depends on the country where said university is located. In Belarus (where I am originally from), just as in many other countries of the former Soviet Union, the higher education is free – if you’re good enough, that is. Your “goodness” is determined by the entrance exams and the competition is fierce. By grade 9, you already know which faculty you will be applying to and you start preparing for the entrance exams: you take evening classes, do endless exercises similar to problems appearing on previous years’ exams, you might even switch high schools to the one that has a specialized class for the subject of your choice. Hard sciences are always popular. In my year, Faculty of Mechanics and Mathematics of Belarusian State University had seventeen times the number of students writing the exams than spots available.

You can apply to only one faculty within one top-tier public university. If you don’t get in, you can apply to less prestigious universities, and to private universities where you pay for your education (they strategically hold their entrance exams later in the summer). Or you can try again next year unless you are male, in which case your mandatory military service will delay your second attempt by 2 years. You get the idea – the stakes are high.

Each written exam includes a variety of problems: a bit of algebra, planar geometry, solid geometry, word problems. For a sample in English, check out Contest Corner problems in *Crux* 40(5) and their solutions in 41(5). If you score high enough on the written exam, you proceed to the oral stage, where you draw 2 or 3 random problems, are given a short time to solve them and then get to discuss your solutions with the admissions committee. Yes, very intimidating. Just to give you some idea of what the problems might be like, here are two from 2009 oral exams to the Faculty of Mechanics and Mathematics of Moscow State University (http://new.math.msu.su/admission):

1. Solve the equation
   \[
   \cos 4x + \sin \left(2x - \frac{a\pi}{64}\right) = \sin 3x,
   \]
   where \(a\) is the smallest two-digit natural number which, when written to the right of 20092009, produces a ten-digit number divisible by 36.

2. Find all values of \(c\) such that the set of solutions \((x, y)\) of the system
   \[
   \begin{align*}
   x^2 + y^2 - 16x + 10y + 65 & \leq 0, \\
   x^2 + y^2 - 14x + 12y + 79 & \\
   (x - c)(y + c) & = 0
   \end{align*}
   \]
   forms a line segment.

I can’t help but wonder, should I give such an examination to my students here in Canada next time I teach a first-year course? Will it be a sobering experience for them as they realize what it takes to get a higher education in another country?

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