

Simultaneous Equations, with Modulus*

In a Year 12 lesson about simultaneous modulus equations, students are asked the following question:

“Give two modulus functions which have graphs that intersect only once.”

The teacher and the students have access to the Geogebra software.

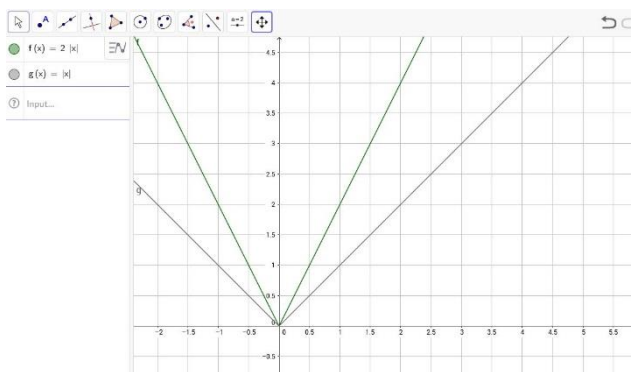
After a while, the following conversation occurs:

Student A: The two modulus functions that I found are $y = |x|$ and $y = 2|x|$.

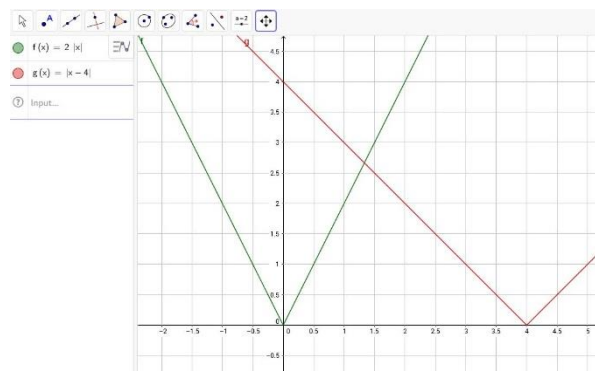
Student B: I found a different pair: $y = |x - 4|$ and $y = 2|x|$.

Teacher: Let’s check these solutions in GeoGebra.

The teacher produces the graphs of Student A’s and B’s suggestions in GeoGebra.



Student A



Student B

Questions:

- What do you think are the issues emerging from the solutions proposed by Students A and B?
- What are the aims of doing this activity in class?
- If you were the teacher, what would you do next, in relation to responding to each of these students and to the whole class?
- How would you use the GeoGebra software, or another software, to support your responses to the above?

**Inspired by the doctoral research of Lina Kayali

This is a Task developed by the MathTASK 2016-17 team. Let us know whether it is useful and how we can improve it at @mathtask or email Irene Biza at i.biza@uea.ac.uk. For more tasks, visit MathTASK.