Secondary & University Mathematics: do they speak the same language?

Thanks for answering those surveys or coming in for interviews.
Here's what we found and some suggested actions that can help you succeed:

New symbols. There are some symbols, usually Greek letters, that students don't recognise, cannot name and may or may not know what they mean.

Action 1: Communicate. Let your tutor know. Don't be embarrassed to ask – if you are unsure about how to name, write or interpret a symbol, you are not alone! Uni students come from different geographical locations and different schools. Australian school maths has changed in recent years so even if your tutor/ lecturer studied in Australia they may assume you are familiar with symbols you have not used. The way to solve this is communication. We talked to lecturers/ tutor about our findings and they were very interested. They want you to succeed.

Action 2: Find a copy of the Greek alphabet with the names of the letters. Save it on your phone or print it and keep it with your maths notes. At some Universities if you look in your hard copy lecture notes you will see that this has been provided.

Action 3: Start and keep a glossary of new maths words and symbols.

Met-befores. Often people misinterpret symbols they had met before because symbols may need to be interpreted differently in new contexts. What sounded like a "rule for life" when you had only met natural numbers is superseded when you meet negative integers. The meaning of a symbols may be altered in the new context.

For example, about half of the survey responses showed confusion over the use of -1 as a superscript. When it's used with a variable e.g x^{-1} the "-" tells us it will be a reciprocal, $1/x$. But used as part of function notation e.g. $f^{-1}(x)$ it indicates the inverse of $f(x)$.

Action 4: Pay attention to the context. Ask yourself: Am I working in Natural numbers? Integers? Real numbers? Complex numbers? Or even Vectors. Is the symbol attached to a variable or a function?

Details matter. Mathematicians choose their words and symbols with care – every piece of a mathematical statement matters. Some people try to skim or speed read maths – as they would some other subjects. This leads to missing important details.

Action 5: Read aloud. Make a habit of actually reading all the detail. Read it out aloud as if you had to convey the maths over the phone to a friend. If you find it tricky, you get stuck on a symbol, or you notice details that had slipped past you before (i) check the audio of you lecture (ii) ask your tutor.

You are not alone – others in your class will need the same help.