ALGY 2

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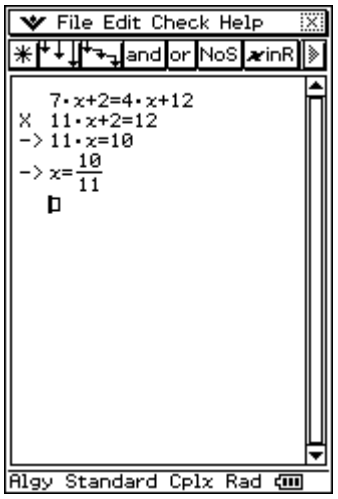
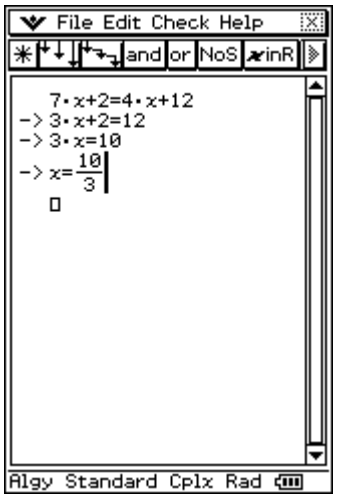
What if:

Every student had a friend that could **quickly** check each line of their working, relative to the previous line, and report if it was right or wrong but did not tell them the answer?



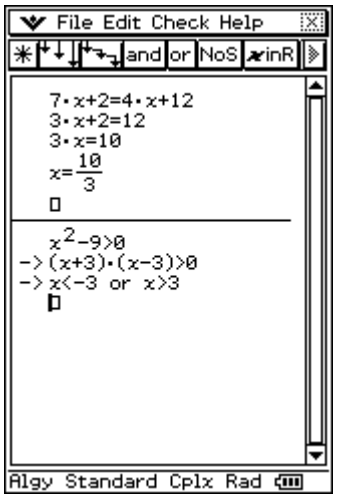
What if:

The student could then **efficiently** edit the lines of working, experimenting to find what to do make them correct?



What if

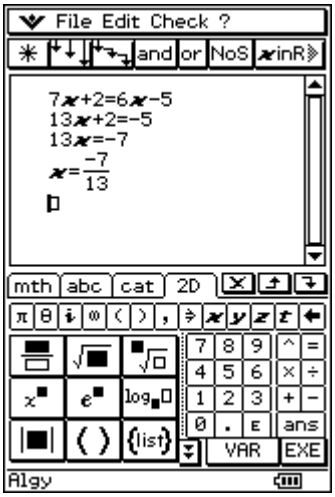
They could do this for **expressions, equations and inequations**?



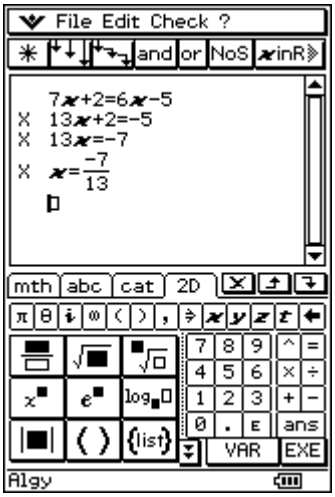
Would this be of use?

The following is a demonstration of ALGY 2.

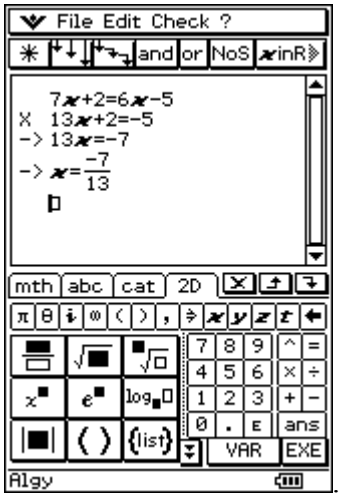
A student is asked to solve $7x + 2 = 6x - 5$. Their first attempt is:



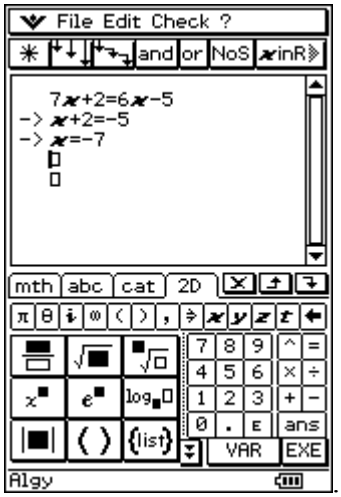
They ask ALGY to check each line relative to the first for correctness, ALGY returns:



They then ask ALGY to check each line relative to the previous to see if they can locate the line in which they made an error and ALGY reports:

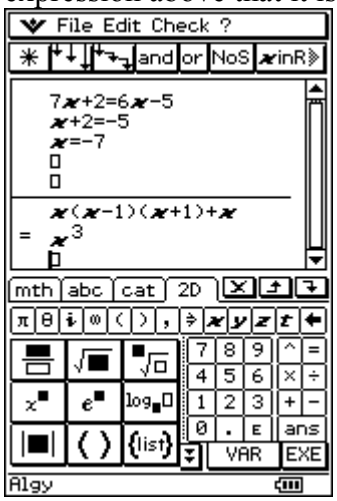


. They then edit and recheck and



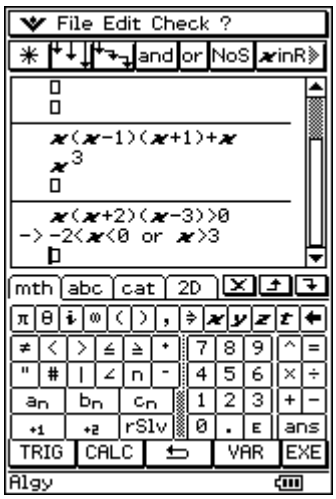
.

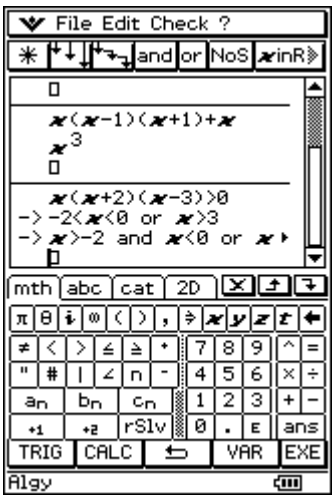
They then add a new zone to work in and are asked to find what $x(x\text{-}1)(x+1)+x$ is equivalent to. The student is very sure, after making a table of values for the expression above that it is a cube, so she asks ALGY to check her and:

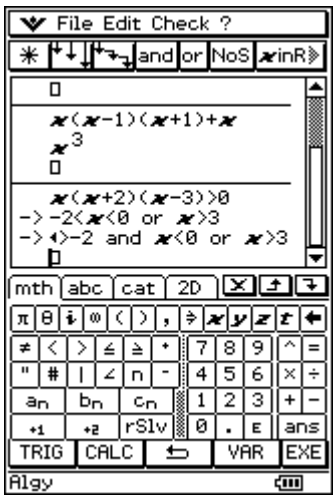


From here on I will not make any errors and just demonstrate ALGY at work:

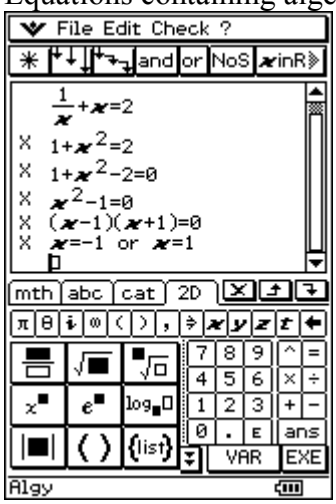
Now let's solve some inequalities.

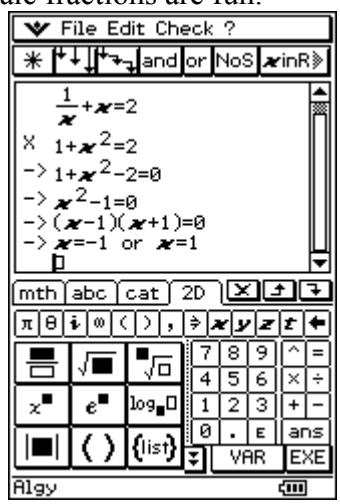


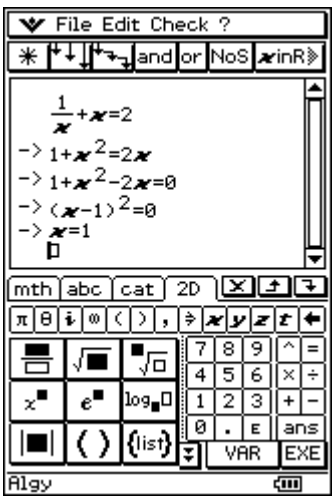




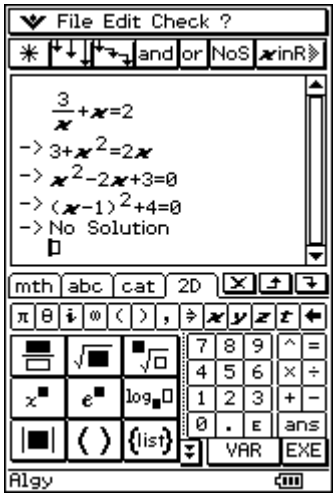
Equations containing algebraic fractions are fun.



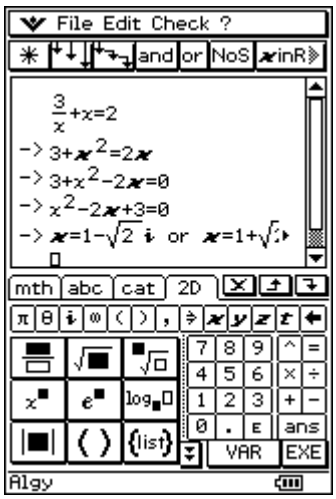




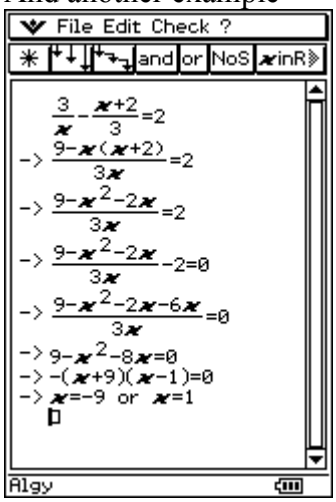
What about when there are no real solutions?



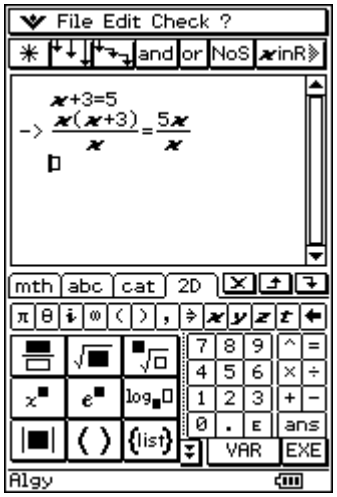
but if you choose to working complex mode then it does have solutions.



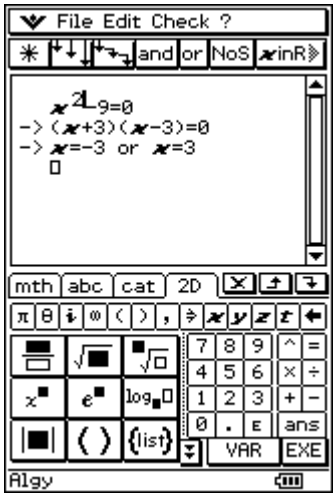
And another example

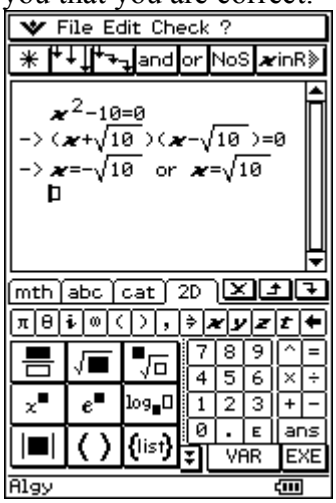


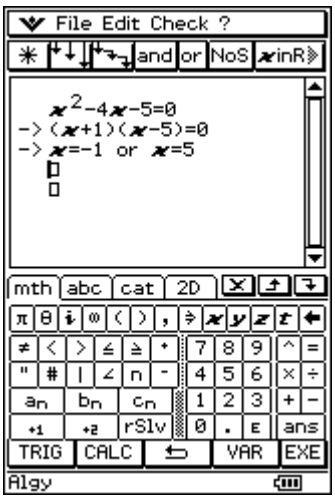
Is this correct?

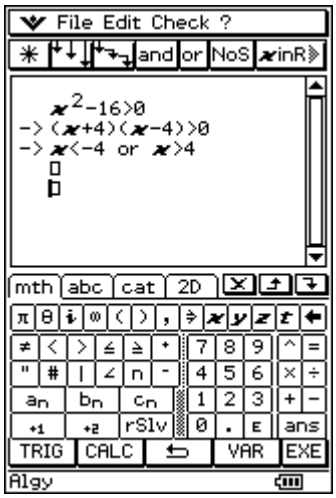


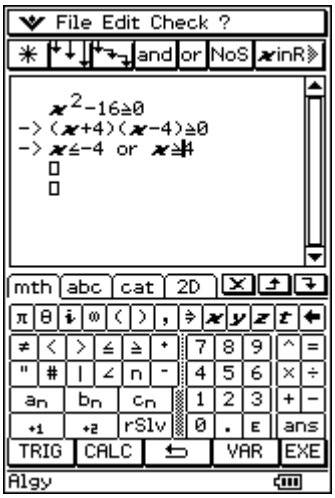
Quadratic Equations/Inequations – note the need for the inclusion of the word OR. No or and ALGY will not tell you that you are correct.





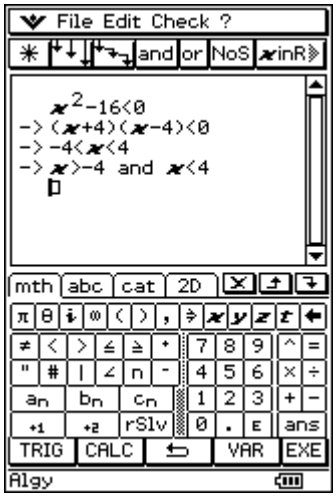




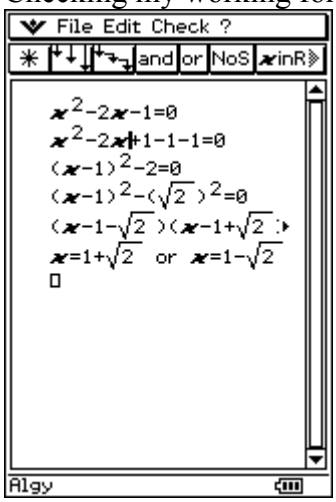


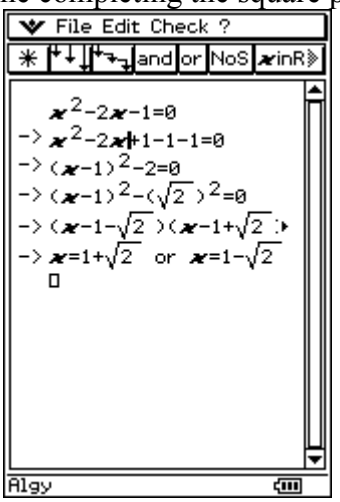
 ALGY, designed by Harradine, coded by Morfey

But this time we need to stipulate an AND.

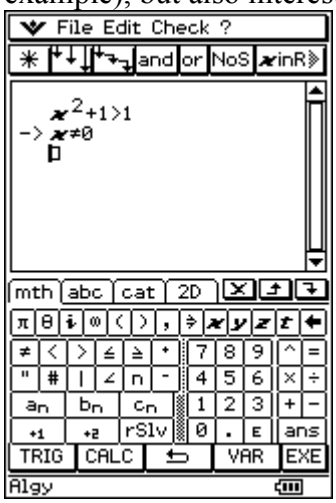


Checking my working for the completing the square process.

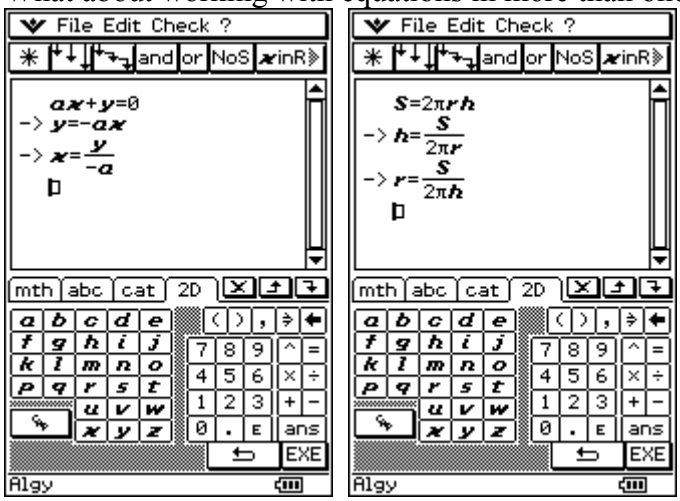




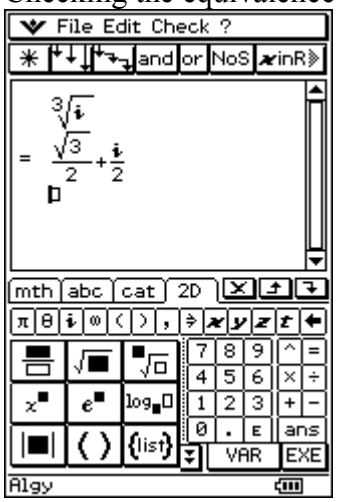
Not only can we deal with situation where there is no real solution (see earlier example), but also interesting cases where the solution is all but one values of x.



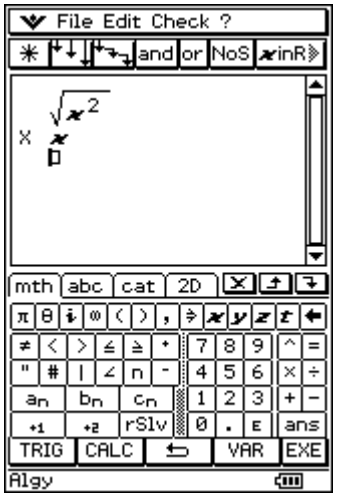
What about working with equations in more than one variable?



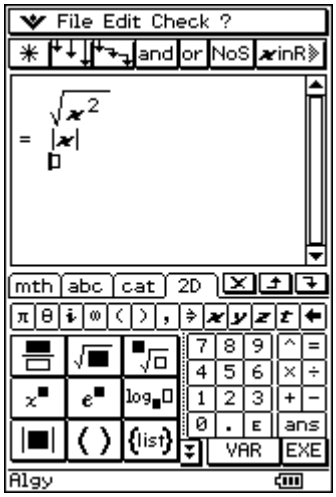
Checking the equivalence of complex numbers:



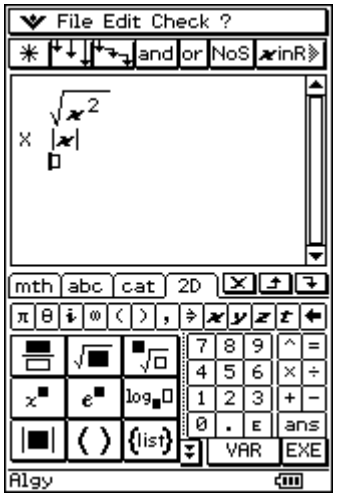
Is ALGY tell me the correct thing below? It is in REAL mode.



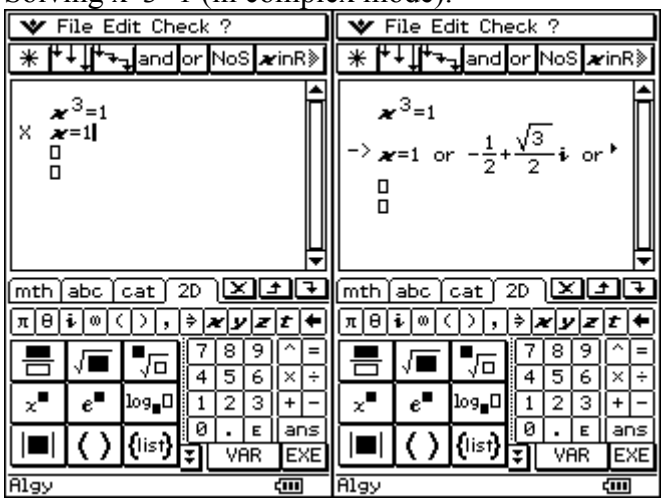
what about now

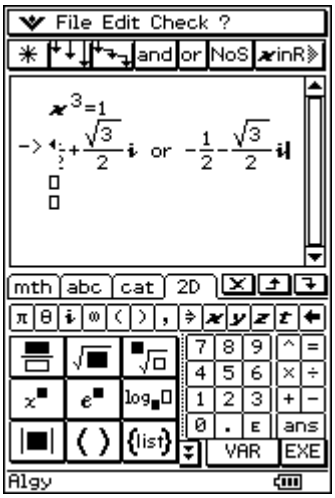


What about if we were in complex mode? What should ALGY report?

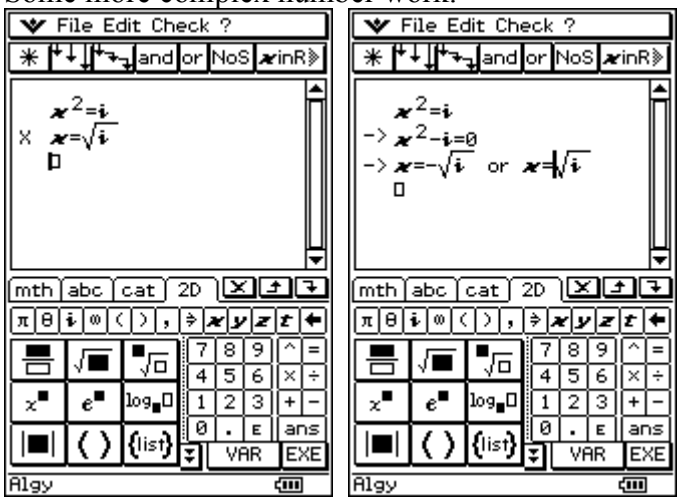


Solving x^3=1 (in complex mode).



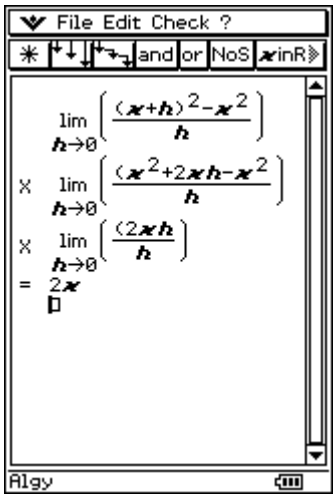


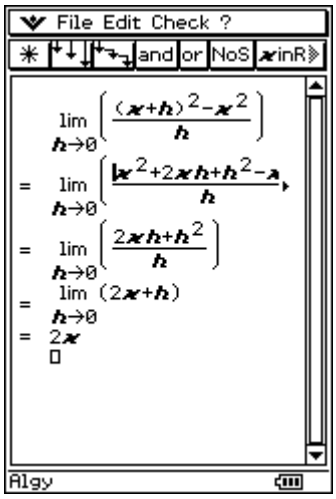
Some more complex number work.



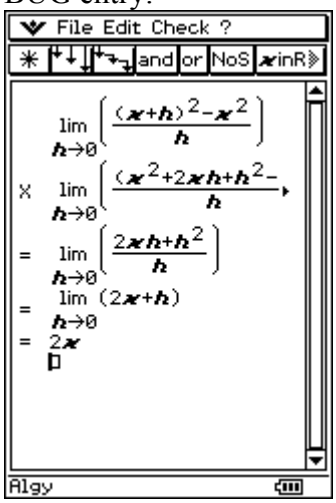
ALGY will not let you be careless!

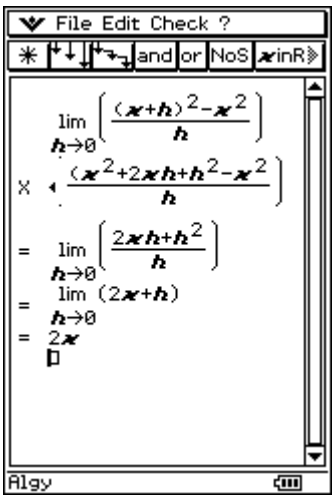
And finally for some first principles calculations.



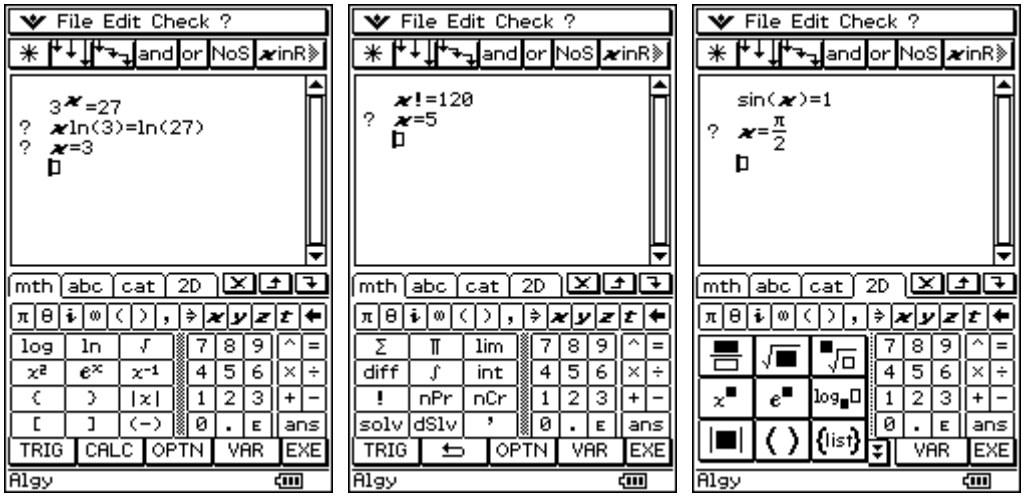


BUG entry.





Now ALGY is not perfect and sometimes can not decide. In such cases ALGY returns a ?



Of course, as ALGY grows older, the more powerful ALGY will become.

A trial version of ALGY 2 can be downloaded from www.stepsinlogic.com You can get a cpy that will run on the CP 300 and also one that will run on a Windows PC.

Trial versions are fully functional, except you cannot save your work, or 'rule off' and start a new problem. Hence, you can only work on one problem at a time and then go to File and New to work on a new problem.

If you like ALGY please tell us.

If you do not, please tell us. Share your thoughts on the topic with me. You can email me at aharra@pac.edu.au

