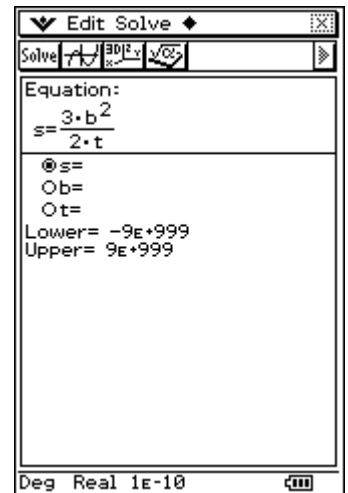


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<b>912</b>	<b>NumSolve Tips</b>	Author	Charlie Watson
		Date	15 March 2011
		CPM OS	<b>03.05.0000</b>

### Displaying your equation.

Notice that when you enter an equation for solving in NumSolve, ClassPad displays the variables in the order in which it comes across them in the equation.

Also, the first variable in the list is always the one selected for solving.



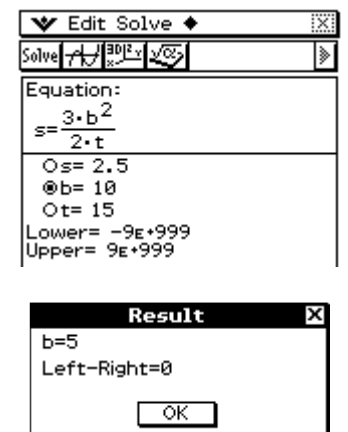
### More than one solution.

NumSolve will only ever find one solution at a time to an equation.

As a rule of thumb, ClassPad finds the 'closest' solution to the value of the variable when **Solve** is tapped.

For example, set  $s = 2.5$ ,  $t = 15$  and  $b = 10$ , select **b** and tap **Solve**.

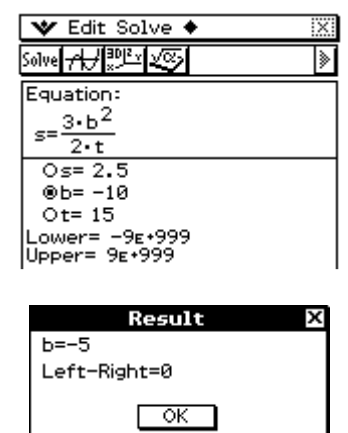
The solution found is  $b = 5$ .



Now set  $s = 2.5$ ,  $t = 15$  and  $b = -10$ , select **b** and tap **Solve**.

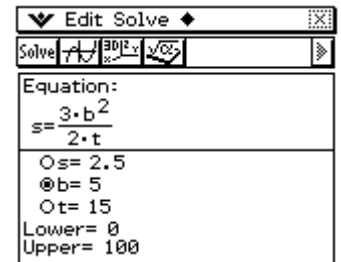
The solution now found is  $b = -5$ .

So a handy tip is to always enter a reasonable estimate of the solution for the variable you are looking for before tapping solve.

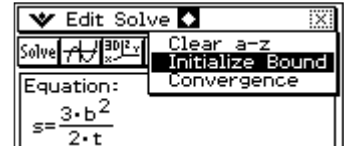


## Restrict the range of solutions.

You can restrict the range of solutions returned by setting the values of Lower and Upper. With the settings shown at left, the negative solution will not be found.

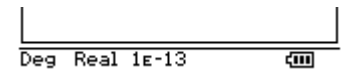


To reset the range, tap  $\blacklozenge$  followed by **Initialise Bound**.

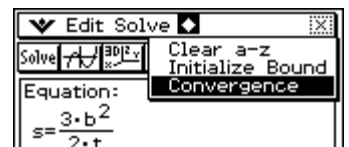


## Quicker solutions.

If Classpad is unable to find, or is taking a long time to return, a solution it may help to decrease the convergence setting.

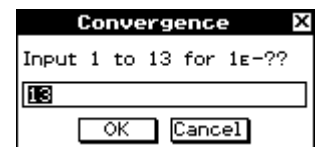


The default setting is shown in the middle of the bottom of the screen and is usually  $1 \times 10^{-13}$ , displayed as 1E-13 - see top right.



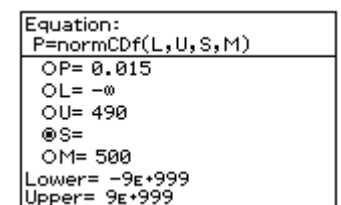
To change the convergence tap  $\blacklozenge$  followed by **Convergence**.

The convergence window opens and a new value can be set.



*Note that the convergence setting is reset to the default value every time you exit the NumSolve application.*

Here's an example of how changing the convergence can help on a hand held ClassPad.



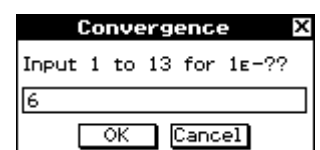
Enter the normal probability equation and values shown at right.

Tap **Solve**.

With the default convergence setting of 1E-13, the "Can't Solve" warning is shown.



Now adjust the convergence to a lower value, such as 1E-6.



Tap **Solve**.

A valid solution is returned.

