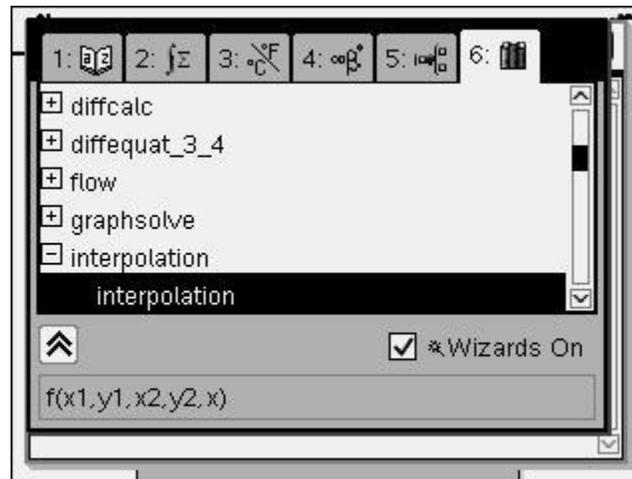


Linear Interpolation/Extrapolation Program

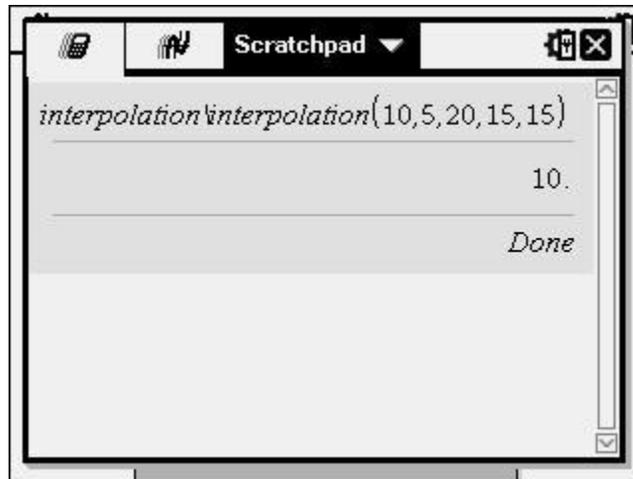
This program will perform linear interpolations and similarly linear extrapolations. This can be useful in Thermodynamics, Chemistry, Hydraulic or many other applications such as statistics etc. This is an averaged approximation and there are many other methods for interpolation/extrapolation. This one is used typically with a small data set and is basically a straight line equation. Below is the relevant equation:

$$y = y_0 + (x - x_0) \frac{y_1 - y_0}{x_1 - x_0} = \frac{y_0(x_1 - x) + y_1(x - x_0)}{x_1 - x_0},$$

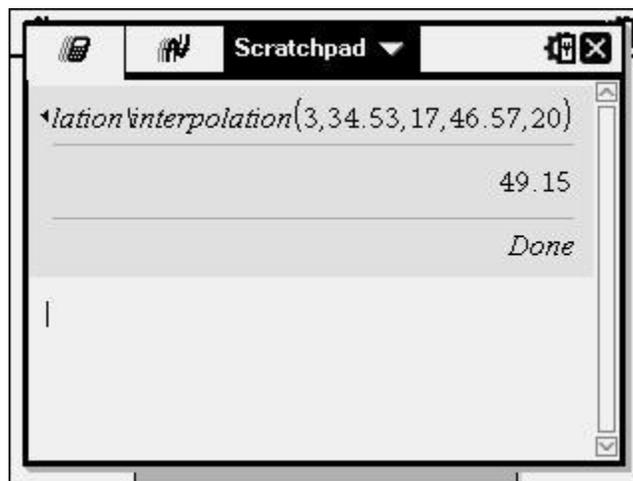
Please remember after downloading to place the "Interpolation.tns" file into the "MyLib" folder in the root directory of the calculator. Also remember to refresh your libraries to make sure this shows up in your calculator library. In the calculator mode select "doc" and then "6:Refresh Libraries". Here is how to use this program:



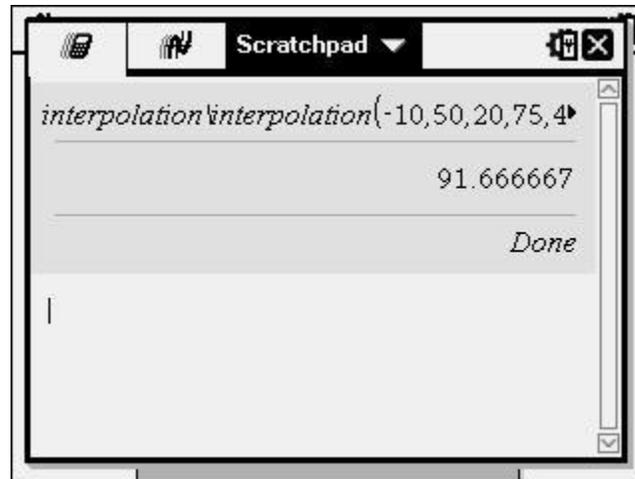
Select the program from your pub library and regard the wizard hint on how to use this program. Let's say you have a gas that at 10°C has a saturated pressure of 5 kPa and you know at 20°C it has a sat pressure of 15 kPa. You want to know at 15°C what the sat pressure is. This has simple enough numbers to see that it should be 10 kPa. But as proof it will be calculated as shown:



If those numbers are more complicated this can become very useful. Take for example at 3°C it has 34.53 kPa and at 17°C it has 46.57 kPa and you need to know what the sat pressure is at 20°. You would have 49.15 kPa:



Finally this is just as applicable to extrapolation. Lets say you have two points: (-10,50) and (20,75) and you wanted to find the y value point if you continued on a straight line to 40. Using this program to extrapolate you get the point (40,91.67):



Which you can graph and see that if that line is continued it is “extrapolated” to that point. This has many applications as it is an averaged value and I hope it is useful. If you think I have made a mistake, please let me know.

Thank You

Brian