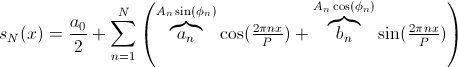
**fs.89p  
version: 1.0**

This program calculates Fourier series coefficients (a0, a(n), and b(n)) of a given function. The function can have any number of piecewise continues intervals. Results will be stored in one letter variables “o” (=a0), “a” (=a\_n), “b” (=b\_n) and “f” (= series as a function of “k”). Resulted coefficients are a function of “n”, thus for example finding a(15) would be easy (type a|n=15 in the entry line).

Calculations are based on these formulas:

****

http://latex.codecogs.com/gif.latex?a_n%20%3D%20%5Cfrac%7B2%7D%7BP%7D%5Cint_%7Bx_0%7D%5E%7Bx_0&plus;P%7D%20s%28x%29%5Ccdot%20%5Ccos%28%5Ctfrac%7B2%5Cpi%20nx%7D%7BP%7D%29%5C%20dx

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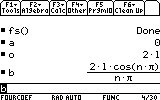
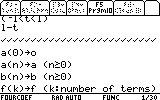
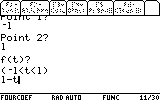
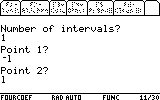
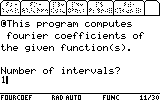
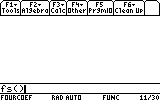
(Note that in some references they may defer a bit, specifically, **a0** may be calculated two times as a0 in this formula, but the final result is always the same)

Using the program is pretty straightforward, see the following examples.

**Example1:**

Find the Fourier coefficients for f(x)=l-x on -l<x<l:

**Solution:**

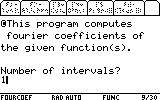
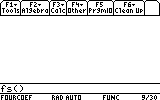
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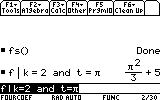
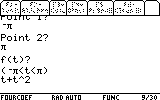
**Example2:**

Find sum of the first 2 terms of Fourier series of f(x) when x=pi:

f(x)=x+x^2 on -pi<x<pi

**Solution:**

****

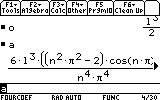
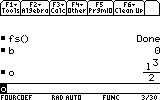
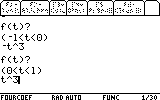
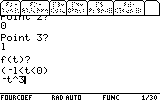
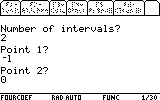
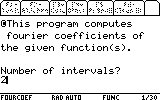
****

**Example3:**

Find the Fourier sine cosine series for:

**Solution:**

Currently the program does not calculate sine and cosine coefficients directly, but it’s easy to find odd and even extensions of functions. (See <http://tutorial.math.lamar.edu/Classes/DE/FourierCosineSeries.aspx> for more information)



**Example4:**

What is bn coefficient of Fourier sine series for the following function?

**Solution:**

