Ay190 – Worksheet 10

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Boundary Value Problem

(1) Using the forward Euler intergrator, I select grids of 10 points, 100 points and 1000 points and plot the results in Figure 1. As the number of grid points increases, the result becomes more and more accurate.

I didn't implement a RK integrator because the structure of the current code is not comfortable to me. It would be much easier if I write the code completely by myself. To save time, I just give up this part.

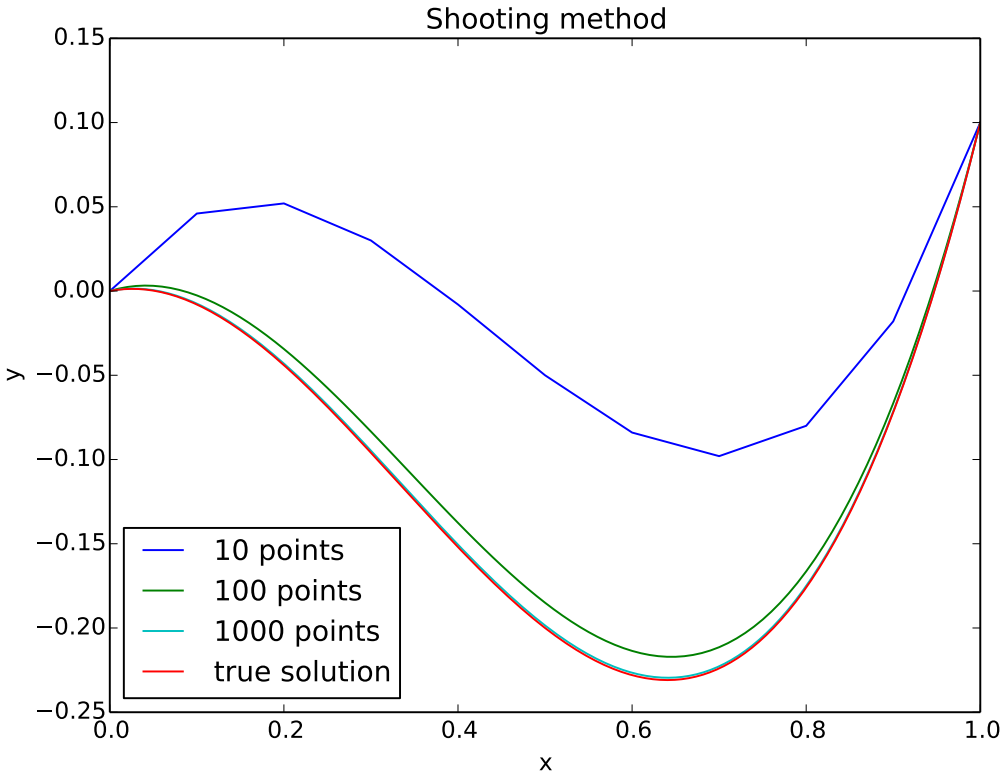

Figure 1: Shooting Method

(2) I write a routine `finite.py` to do the finite difference method. So far this routine is limited to 1-dimensional problem with uniform grid. I take number of grid points as 6 and 10 and plot the result in Figure 2.

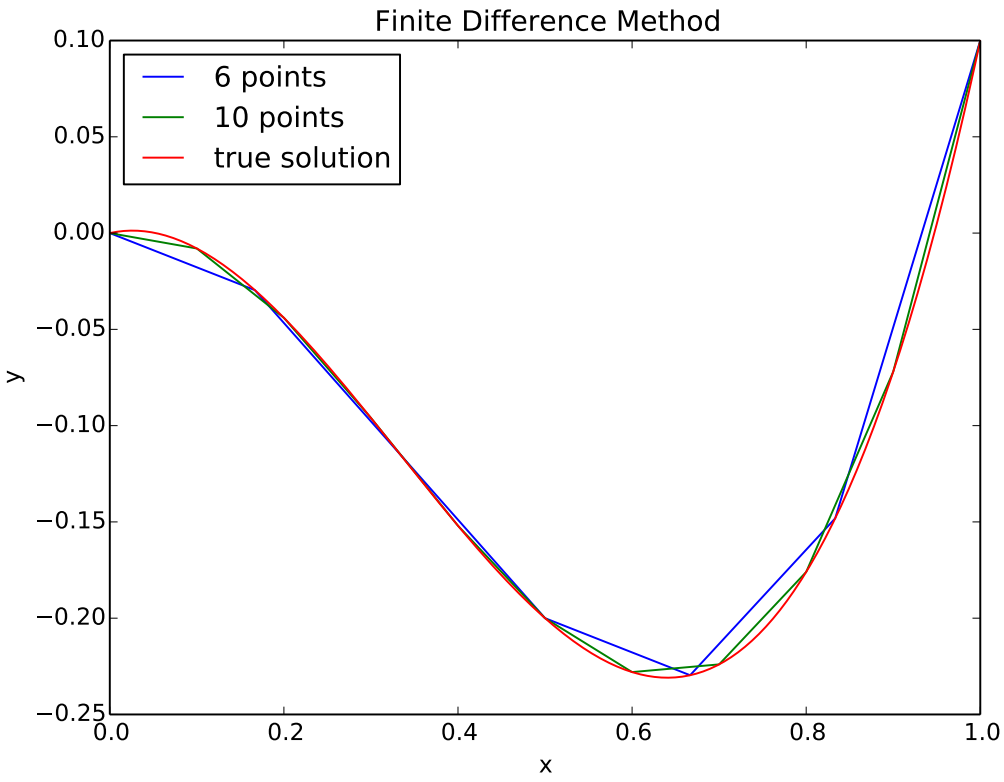

Figure 2: Finite Difference Method