CHAPTER III

RESEARCH METHODOLOGY

There are several steps to do the project:

1. Search the References

First thing to do before starting the project is to search the references from many journals, books , and researches. This step will search the reference for learn about the algorithm, the steps to do the algorithm, and find the new problem that can be solved by the algorithm. In this project, the algorithm is the Particle Swarm Optimization algorithm and the problem is to searching the root of polynomial function.

2. Analysis and Design

For starting the project, the next steps is to analysis the problem, search the way to solve the problem with the algorithm, and search the improvement that can be done form previous research. To search the root, the algorithm need to use the fitness value to decide the best solution. that value can be obtained from the calculation of the function value. For the improvement, this project will try to find all of the function root and draw the polynomial graph. After that, make the design to make it more easy when implementing and developing the program

3. Implementing the algorithm

The next step is to do the implementation to the program. Make the program based on the design that have been made. This step will make the program for converting text of polynomial problem to get the coefficients and the exponents, search the root using the Particle Swarm Optimization algorithm, draw the graph, and make the Graphical User Interface.

4. Testing the algorithm

The last step is to do the testing from the program that has been made. There are 2 testing that need to be done. The first testing is testing to fix the program from the error or problem. The second testing is to testing the parameter that used for the algorithm and testing to solve the different problem. The result of second testing is to get the best parameter to solve the problem.