Logan Maier Activity 2

1.2) In C++ the entire script could be written in one long, continuous lin without issues from most compilers. BUT, it is common practice to indent consistently to help guide someone else through the different parts of the script, and make it easier on the eyes.

1.3) Errors: Set Precision needs #include <iomanip>, main did not have a specified type of int, discriminant did not have a specified type, and there was a typo on one of the cout commands.

1.4) Per the preclass reading, we should expect that x1p and x2 are the more accurate calculations. This is shown in equations 2.19 and 2.20, these two scenarios respectfully are much larger than the machine's precision.

1.5) "< " " ofstream fplot ("quadratic_eq.dat"); ", I have never worked with graphs in C++.
" float rel_error1 = fabs ((x1_worst - x1_best) / x1_best);" am not sure what fabs is.

1.8) I believe that it is consistent for most of the graph. The only point that differs is the last set of points. In eq 2.19 and 2.20 we can expect a larger error as c gets smaller and the graph reflects that. Also, the slope is representative of the machine precision in its log form.

2.1) prediction: I expect to get a output of many correctly incremented values, then the incrementation with stop and it will repeat the same number repeatedly.

2.2) prediction: I predict that in the beginning it will start with a lot of zeros if the incrementation keeps the values smaller than the machine precision, then eventually increment up. I believe this output will be small than the previous.

2.3) I believe that our outcomes will be different, given that I do not believe the machine precision will hinder the calculation.

2.4)

Array of the small values
Array to hold forward outputs
Array to hold backward outputs
Arange from a to 1, divided into 10^7 steps.

Forward and backward calculation

Compare the difference between the two.

The actual script is way more in depth than I envisioned.

2.7) I predict that we will get the same results.

We indeed got the same result.

3.2) It is outputting the x iteration, the up recursion, and the down recursion

3.3)