# LabView Project Test Plan

The project requirements are numbered, the testing steps are in bullet points.

1. Be able to be used with the on-screen GUI with the mouse
   * Click on buttons in the GUI and make sure the input symbol matches what you clicked.
2. Show at least 6 characters on the output
   * Enter two numbers split by an operator (addition, multiplication, division, and subtraction) and make sure the solution has at least 6 digits.
3. Show the correct answer to at least 6 significant figures of precision
   * Multiply two numbers to return a 7+ digit answer. Check the answer with another calculator to make sure the answer is accurate and precise to 6 significant figures.
4. Provide a signed output between at least the range of 1E+38 and 1E-38
   * This is impossible to test with these current requirements. One of the highest values we can create is based on the speed of light constant, C. If we do (C\*C\*C) the answer should output to the order of 1E+25
   * If we do 1/(C\*C\*C) the answer should output to the order of 1E-26.
5. Display the current inputs of operators and operands on a display box
   * Enter in a simple calculation and make sure every input is shown in the display box.
6. New entered values or operators will append to the right side of the already displayed inputs
   * Make a simple equation then equate the answer, once you get an answer try adding another value straight away and see if it works.
7. Have one button each for inputs 0 through 9
   * Check visually for each of the 0-9 buttons and then press each to make sure they input correctly.
8. Have a + button which adds the numbers on either side of the operator.
   * Check visually for the + button and click it to make sure it displays.
   * Test adding two numbers and then press the = button (see 13).
9. Have a - button which subtracts the right-hand side number from the left-hand side number
   * Check visually for the - button and click it to make sure it displays.
   * Test subtracting two numbers and then press the = button (see 13).
10. Have a × button which multiplies the left-hand number by the right
    * Check visually for the × button and click it to make sure it displays.
    * Test multiplying two numbers and then press the = button (see 13).
11. Have a ÷ button which divides the left-hand number by the right
    * Check visually for the ÷ button and click it to make sure it displays.
    * Test dividing two numbers and then press the = button (see 13).
12. Have a . Button which creates a decimal place. Any numbers entered afterwards will be placed in the 10^-n th place until another operator is pressed
    * Type 0.(more numbers) then press any operator and continue entering numbers to see if the notation properly worked.
13. Have an = button which performs the operations and displays the result
    * Perform a simple operation and look for the result in the output box.
14. Have a CLEAR button which clears all values from the input screen
    * Enter some random numbers and then click the clear button and make sure the whole screen clears.
15. Have the CLEAR button clear all operators as well
    * Add some numbers and operators to the display and then click the clear button and make sure the whole screen clears.
16. Have a DELETE button which deletes the last (rightmost) entered operand or operator
    * Enter in 2 numbers and hit delete to see if it deletes the rightmost number
    * Enter in some operators making sure the rightmost and click delete, make sure only the rightmost operator is deleted.
17. Feature at least 6 buttons for stored physics constants which will input the same letter as shown on its button. They will show as a letter, but their value will be used for calculations
    * Visually see at least 6 known physics constants.
    * Check that the input letter is the same as what is displayed on the button
    * Click each one and test it in a simple calculation to make sure the proper value is being used.
18. Show the number in scientific notation if the output exceeds the space for characters on the display. The exponent will show as “E+n” or “E-n” where n is an integer
    * Multiply two numbers to produce a result larger than 6 digits, and check if the output box displays it in the C\*E+n format.
19. Use the last entered operator if two operators are entered with no operand between them. This will not apply to the plus or minus key since they can mean positive or negative (operands)
    * Enter 1 ÷ x 2 and make sure the answer is 2, as it should only use the multiplication operator.
20. If an operator requires two operands and only 1 is given, the lone operand input will be duplicated and used as the second
    * Enter 2\* and hit ‘=’ and see if the output is 4.
21. Display “inf” if dividing a positive number by 0
    * Divide 1/0 and look for “inf” as an answer
22. Display “-inf” if dividing a negative number by 0
    * Divide -1/0 and look for “-inf” as an answer
23. Display “inf” if dividing 0 by 0
    * Divide 0/0 and look for “inf” as an answer