MA305 final

2.) The advantages of floating-point numbers are that
they can represent really large values,
really small values
and non-integer values.

The disadvantages are
They get less precise the further from zero it is
They can result in rounding errors
Can get overflow or underflow errors from really large or small values respectfully

3a) midpoint seemed to perform as expected for both the sqrt and cos integrals. It gained two decimal places of accuracy for every time the step size was divided by ten.
3b) The trapezoid rule also performed as expected; it gained one decimal place of accuracy for every time the step size was divided by ten.
3c) Simpson's Rule was expected to get 4 decimal places of accuracy for every time the step size was divided by ten but it actually performed on the same scale as the trapezoid rule for both functions tested.

4.)Rounding the right way is alternating between rounding up and and rounding down when the relevant digit is 5. When rounding 3.5 and 1.5 to the nearest integer, it is proper to round up once and down once so we could get 4 and 1 or 3 and 2 where the traditional way is to always round up on the edge case and would always get 4 and 2 which means that the loss in precision will propagate more.

5.) Some of the main advantages of using a system like git is that it keeps track of changes made to the file so you can easily revert to an older version if necessary. It is also useful for coordinating with a team of developers as one person can work on one part of the file and another person can work on another part and git can update the file with both of their changes. You can also commit offline and update later.

6.) The derivative compared against was $(2x+2)\sec^2(x^2+2x+1)$.