

Here goes your title, for example:

Examination project: calculation of error function using integral representation

Here goes your name
Aarhus University

Here goes your abstract: a concise description of what the problem was and how you solved it.

I. INTRODUCTION

A more detailed description of your problem and the approach to its solution.

You might need some equations here, for example, a definition of the error function $\text{erf}(x)$,

$$\text{erf}(x) \doteq \frac{2}{\sqrt{\pi}} \int_0^x e^{-t^2} dt. \quad (1)$$

You can refer to this equation as equation (1). The definition is (probably) from [1].

Here is another equation, this time for complementary error function, $\text{erfc}(x)$, which is defined as

$$\text{erfc}(x) \doteq \frac{2}{\sqrt{\pi}} \int_x^\infty e^{-t^2} dt = 1 - \text{erf}(x). \quad (2)$$

The reference to this equation is equation (2).

II. IMPLEMENTATION

Here goes a description of how you solved the problem. For example, you might have reduced the argument of your function to some reasonable limits using certain properties of your function.

For square root, for example, you might have used the following property,

$$\sqrt{x} = \frac{1}{\sqrt{\frac{1}{x}}}, \quad (3)$$

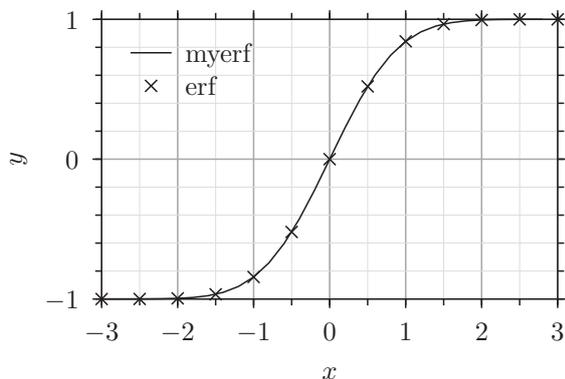


FIG. 1: The plot of the implemented error function $\text{myerf}(x)$ together with the $\text{erf}(x)$ function from C standard library.

which allows one to express the square root of a number which is less than one via a square root of a reciprocal number. That was, by the way, equation (4).

One can reduce a large argument of the square root function to a number between one and nine by repeatedly (and recursively) applying the formula

$$\sqrt{x} = 3\sqrt{\frac{x}{9}}. \quad (4)$$

III. RESULTS

Here is the place to present your results and argue that they are correct.

Most probably you need a figure — which, proverbially, costs a thousand words — like figure 1, where myerf function is plotted together with erf function from the standard library. This figure was made with `pyxplot` using the `pdf` terminal. It is included via the `graphicx` package.

The complementary error function is illustrated on figure 2. It was made with `gnuplot` using the `latex` terminal and was directly included using the `\input{plot2.tex}` command.

Two pages should be enough for a report.

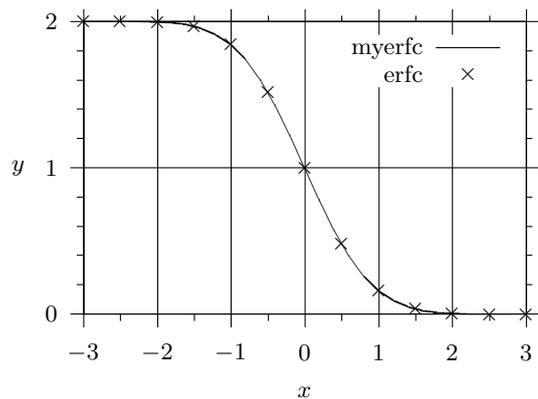


FIG. 2: The plot of the implemented complementary error function $\text{myerfc}(x)$ together with the $\text{erfc}(x)$ function from the standard library.

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- [1] Andrews, Larry C.; Special functions of mathematics for engineers.