Hello world! This is my first LaTeX document.

1 Formulas

A rectangle has side lengths of $(x+1)$ and $(x+3)$.A hard return is going to start a new paragraph.
A rectangle has side lengths of $(x+1)$ and $(x+3)$. \\ is a soft return and therefore the line is not indented.

The equation

$$A(x) = x^2 + 4x + 3$$

gives the area of the rectangle.
{} makes sure to keep your equation on a line.

$$\alpha^2 + \beta^2 = \gamma^2 \tag{1}$$

Famous Gaussian quadrature:

$$\begin{aligned} S &= 1 + 2 + 3 + \cdots + n \\ S &= n + (n-1) + (n-2) + \cdots + 1 \\ 2S &= (1+n) + (2+(n-1)) + (3+(n-2)) + \cdots + (n+1) \\ 2S &= n(n+1) \\ S &= \frac{n(n+1)}{2} \end{aligned} \tag{2}$$

Formulas for various situations:

$$F(x) = \begin{cases} 0 & \text{, if } x < -1 \\ x+1 & \text{, if } x > 3 \\ 1 & \text{, otherwise.} \end{cases} \tag{3}$$

$$a^2 + b^2 = c^2$$

Reference test Equation 1

Insertion of pictures:
Try to insert vector graphics so that the image will not change in clarity when it is enlarged or reduced.