Examples of macros in latex.

To save some time when writing too many expressions with exponents is by defining a new command to make simpler:

$$(x + y)^2$$

And even the exponent can be changed

$$(y + y)^4$$

Let's analyse the syntax of the line \newcommand{\plusbinomial}[3][2]{(#2 + #3)^#1}:

\plusbinomial
    This is the name of the new command.

[3]
    The number of parameters the command will take, in this case 3.

[2]
    Is the default value for the first parameter. This is what makes the first parameter opt

(#2 + #3)^#1
    This is what the command does. In this case it will put the second and third parameters