```
% Symbolic manipulation
clc, clear

syms x y

y = 2*(x + 3)^2 / (x^2 + 6*x + 9)
```

y =

$$\frac{2\,(x+3)^2}{x^2+6\,x+9}$$

```
%   2    (x+3)^2       2    (x+3)^2
% -------------- = -------------- = 2
% (x^2 + 6x + 9)        (x+3)^2

simplify(y)
```

ans = 2

```
clc, clear

syms x y

eqnf = y == 2*(x + 3)^2 / (x^2 + 6*x + 9)
```

eqnf =

$$y=\frac{2\,(x+3)^2}{x^2+6\,x+9}$$

```
simplify(eqnf)
```

ans = $2\,(x+3)^2=y\,(x+3)^2\wedge x\neq -3$

```
clc; clear;

syms y1 y2 x

y1 = (x+1)^2
```

y1 = $(x+1)^2$

```
y2 = x^2 + 2*x + 1
```

y2 = $x^2+2\,x+1$

```
if simplify(y1) == simplify(y2)
```

```
    disp("same")
else
    disp("not the same")
end
```

```
same
```

Other useful functions

```
% Expand
% Factor
% Numden
% Collect
% Simplify

clc, clear
syms x y z
y = (x+3)^2
```

y = $(x+3)^2$

```
expand(y)
```

ans = x^2+6x+9

```
% Expanding equations works too

clc, clear
syms x y z
y = x^3 + 3*x^2 + 3*x + 1
```

y = x^3+3x^2+3x+1

```
factor(y)
```

ans = $(x+1 \quad x+1 \quad x+1)$

```
clc, clear
syms x y
y = (x+3)/(x+6)
```

y =

$$\frac{x+3}{x+6}$$

```
[top, bottom] = numden(y)
```

top = $x+3$

bottom = $x+6$

```
% cant use for eqns

clc, clear
syms x y z
y = (x+3)^2 + (x+z)^2
```

y = $(x+3)^2+(x+z)^2$

```
collect(y,x)
```

ans = $2x^2+(2z+6)x+z^2+9$

```
% works on eqns too

factor(24)
```

```
ans = 1×4
     2     2     2     3
```