**Code:**

%Zeilenvektor

a = [1,2,3]

%Spaltenvektor

b = [1;2;3]

%Invertierung

a\_inv = a'

b\_inv = b'

%addition von Vektoren

c = [2,3,4];

d = c + 2

%Multiplikation von Vektoren

e = [5,6,7];

f = e \* 3;

%Elementweise Multiplikation von Vektoren

g = [1,4,6];

h = [2,5,8];

i = g.\*h

%Spalten und Zeilen aus Matrizen als Vektor darstellen

j = [1,2,4;2,5,8;8,4,2];

k = j(2,:)

l = j(:,1)

%Zeilenvektor mit gelichen Abständen erstellen

m\_start = 0;

m\_step = 1;

m\_end = 10;

m = [m\_start:m\_step:m\_end]

n\_start = 0;

n\_end = 10;

n\_accuracy = 5; %Anzahl Elemente

n = linspace(n\_start, n\_end, n\_accuracy)

%Skalarprodukt

o = [1,2,3,4];

p = [3,4,5,6];

q = dot(o,p)

%Vektorprodukt

r = [2,3,6];

s = [4,8,1];

t = cross(r,s)

%Matrix eingeben

u = [1,2,3;4,5,6;7,8,9]

%Gauss

v = [1,1,1;2,-1,2;3,-2,1];

v\_b = [6;6;2];

v\_ges = [v,v\_b]

v\_los = rref(v\_ges)

%Plot

%Parameter

x\_start = -2;

x\_step = 0.001;

x\_end = 2;

lw\_1 = 3;

lw\_2 = 7;

%data

x\_data = x\_start:x\_step:x\_end;

f = @(x)3\*x.^2;

g = @(x)x.^3;

f\_data = f(x\_data);

g\_data = g(x\_data);

%plot

plot(x\_data, f\_data, '-', 'linewidth', lw\_1)

hold on;

plot(x\_data, g\_data, '--', 'linewidth', lw\_2)

hold off;

grid on;

%plot-Acshen-Beschriften

%Paramter

fs = 20;

title('Graph of x^3 and its Ableitung')

xlabel('x', 'fontsize', fs);

ylabel('y', 'fontsize', fs);

legend('3\*x^2','x^3')

**Resultat:**

>> Stoffel\_Mauro

a =

1 2 3

b =

1

2

3

a\_inv =

1

2

3

b\_inv =

1 2 3

d =

4 5 6

i =

2 20 48

k =

2 5 8

l =

1

2

8

m =

0 1 2 3 4 5 6 7 8 9 10

n =

0 2.5000 5.0000 7.5000 10.0000

q =

50

t =

-45 22 4

u =

1 2 3

4 5 6

7 8 9

v\_ges =

1 1 1 6

2 -1 2 6

3 -2 1 2

v\_los =

1 0 0 1

0 1 0 2

0 0 1 3

