

# Computergestuetzte Mathematik zur Analysis

## Lektion 4

```
> restart;
```

### ▼ Listen, Mengen und Folgen

```
> liste := [1,0,3,4,2];  
> menge := {1,0,4,1};  
> mengel:= {1,2,4,5};  
> menge union mengel;  
> folge := x,y,z;  
> x$3;  
> seq(1/k,k=1..4);  
> liste[2];  
> menge[2];  
> folge[1];  
> convert(liste,set);  
> convert(menge,list);  
> [folge];  
> {folge};  
> [?]  
> nops(%);
```

### ▼ Op / Map / Apply

```
> u:=[a,b,c];  
> a:= x^2+y^(1/2)+sin(z);  
> u;  
> nops(u);  
> nops(a);  
> whattype(a);  
> op(1,a);  
> op(2,a);  
> op(3,a);  
> u;  
> op(1,u);  
> whattype(u);  
> op(2..3,u)  
> op(1,op(1,u));
```

## Mehr zu Maple Operatoren

```
> ex1 := x^2-y*z*sin(v)+(1/2)*Pi+int(g(x),x=0..1);
> op(ex1);whattype(ex1);
> whattype(ex1);
> op(2,ex1);
> whattype(op(2,ex1));
> op(1,op(2,ex1));
> op(4,op(2,ex1));
> whattype(op(4,op(2,ex1)));
```

```
> f := x -> x^2;
```

```
> liste;
```

```
> f(liste);
```

```
> map(f, liste);
```

```
> map(f, menge);
```

```
Fehlerquelle:
```

```
> map(sin, folge);
```

```
> map(sin, [folge]);
```

```
> apply(g);
```

```
> apply(h,s,t,u,v);
```

```
> apply(sin,Pi);
```

```
> map(apply,[sin,cos,tan],Pi);
```

```
> q:=sin(x) + y^2 + x*y^z;
```

```
> p:=unapply(q,x,y,z);
```

```
> p(1,0,2);
```

```
> liste1 := [1, 2, 4, 6];
```

```
liste2 := [-1,2,3,4];
```

```
> g := (x,y) -> x+y;
```

```
> zip(g,liste1,liste2,liste1);
```