

Computergestuetzte Mathematik zur Analysis

Lektion 5 (Programmsteuerung)

For Schleifen

```
> liste :=[a,b,x+y];  
> for k in liste do  
  k^3;  
od;  
  
> for l from 1 to 7 do  
  l, evalf(sin(Pi/l))  
end do;  
  
> out := 0;  
for le in [1, z,x^2, sin(y)] do  
  out := out+le;  
od;  
  
> for k from 20 by -2 while k>8 do  
  k,sin(k),unapply(x^k,x),k, x->x^k;  
  for l from 1 to 3 do  
    erg := l+k; print(l,k,l + k);  
  od;  
  k+erg;  
od;  
  
> i:=0;  
from 1 to 4 do  
  i:= i+1;  
od  
  
> i:=0;  
from 1 while i<4 do  
  i:=i+1;  
end do;
```

Einfache logische Aussagen

```
> a:= 3; b:=5;  
> a<b;  
> evalb(a<b);  
> is(a=b);  
> is(a<>b);
```

```
[> a ≠ b; # a "!=" b # a ungleich in 2D Maple Input
```

```
[> a:=true; b:=false; c:=true;
```

```
[> a and b
```

```
[> a or b
```

```
[> `or` (a,b);
```

```
[> `xor` (a,b);
```

```
[> `xor` (a,c);
```

```
[> a := 1+I;
```

```
  I^2
```

```
[> is(a,real)
```

```
[> is(a,integer);
```

```
[> is(a,complex);
```

```
[> ? property
```

▼ If Abfragen

```
[> a:=3; b:=5;
```

```
[> if b<a then
```

```
  a
```

```
  else
```

```
  b
```

```
  end if;
```

```
[> for j from 4 to 8 do
```

```
  if isprime(j) then
```

```
    print(j,evalf(sin(Pi/j))):
```

```
  fi:
```

```
od;
```

```
[>
```

▼ While Schleife

```
[> q:=1016:
```

```
  while is(q,even) do
```

```
    q:=q/2;
```

```
  end do:
```

```
  q;
```

▼ Maple Funktionen

```
[> restart;
```

```
[> myfun := proc(x,n,m)
```

```
  description "Berechne sin(nx) cos(mx)";
```

```
    sin(n*x) * cos(m*x);
end proc;
> myfun(1,2,3)
> myfun2 := proc (x, n, m)
    local a,b;
    description "Berechne sin(nx) cos(mx)";
    a := sin(n*x);
    b := cos(m*x);
    a*b;
end proc;
> myfun2(1,2,3);
> a;
> Describe(myfun);

> divide2en:= proc (n)
    local q;
    q := n;
    while type(q, even) do
        q := (1/2)*q
    end do;
    q;
end proc;
> divide2en(1016);
```