

## Symbolisches Differenzieren am Beispiel eines FORTRAN-Programms

```
FUNCTION F(X)
A=1.0
B=COS(X)
DO 1 N=1,5
D=B
B=SQRT(A*B)
A=(A+D)/2.DO
1 CONTINUE
F=2.0*ATAN(1.0)/A
RETURN
END
```

```
FUNCTION DF(X)
DA=0.0
A=1.0
DB=-SIN(X)
B=COS(X)
DO 1 N=1,5
DD=DB
D=B
DB=0.5*(DA*B+A*DB)/SQRT(A*B)
B=SQRT(A*B)
DA=(DA+DD)/2.0
A=(A+D)/2.DO
1 CONTINUE
DF=-2.0*ATAN(1.0)*DA/A**2
F=2.0*ATAN(1.0)/A
RETURN
END
```