


```
> 70!
  2^7
935825911716397796568186228256960838785854542386439520121512\ (1.5)
72379906324865545666560000000000000000
```

```
> 2/3; 3/4; 3/2 # Trennzeichen ;
                                     2
                                     3
                                     3
                                     4
                                     3
                                     2 (1.6)
```

und numerisch mit beliebiger Praezision

```
> evalf(2/7)
0.2857142857 (2.1)
```

```
> evalf(2/7, 200)
0.28571428571428571428571428571428571428571428571428571428571428571\ (2.2)
4285714285714285714285714285714285714285714285714285714285714285\
7142857142857142857142857142857142857142857142857142857142857142\
8571428571428571428571429
```

```
> evalf(Pi, 300)
3.14159265358979323846264338327950288419716939937510582097494\ (2.3)
4592307816406286208998628034825342117067982148086513282306\
6470938446095505822317253594081284811174502841027019385211\
0555964462294895493038196442881097566593344612847564823378\
6783165271201909145648566923460348610454326648213393607260\
24914127
```

Zuordnung / Namen

```
> f := (a + b)^2
f := (a + b)^2 (3.1)
```

```
> a := 2; b := 5;
a := 2
b := 5 (3.2)
```

```
> f;
49 (3.3)
```

> a := 'a' a := a (3.4)

> f; (a + 5)² (3.5)

▼ Achtung Reihenfolge

> restart;
> a := 5; a := 5 (3.1.1)

> b := 2; b := 2 (3.1.2)

> f := (a + b)² f := 49 (3.1.3)

> a := 'a' a := a (3.1.4)

> f; 49 (3.1.5)

▼ Polynome und rationale Funktionen

> P := (x² + 2·x + 1) P := x² + 2 x + 1 (4.1)

> Q := (x + 1); Q := x + 1 (4.2)

> $\frac{P}{Q}$ $\frac{x^2 + 2 x + 1}{x + 1}$ (4.3)

> simplify(%) # % dito Operator das letzte ausgegebene Ergebnis x + 1 (4.4)

> factor(P); (x + 1)² (4.5)

>

▼ Konstanten

> Pi π (5.1)

> gamma γ (5.2)

> evalf(gamma, 10)

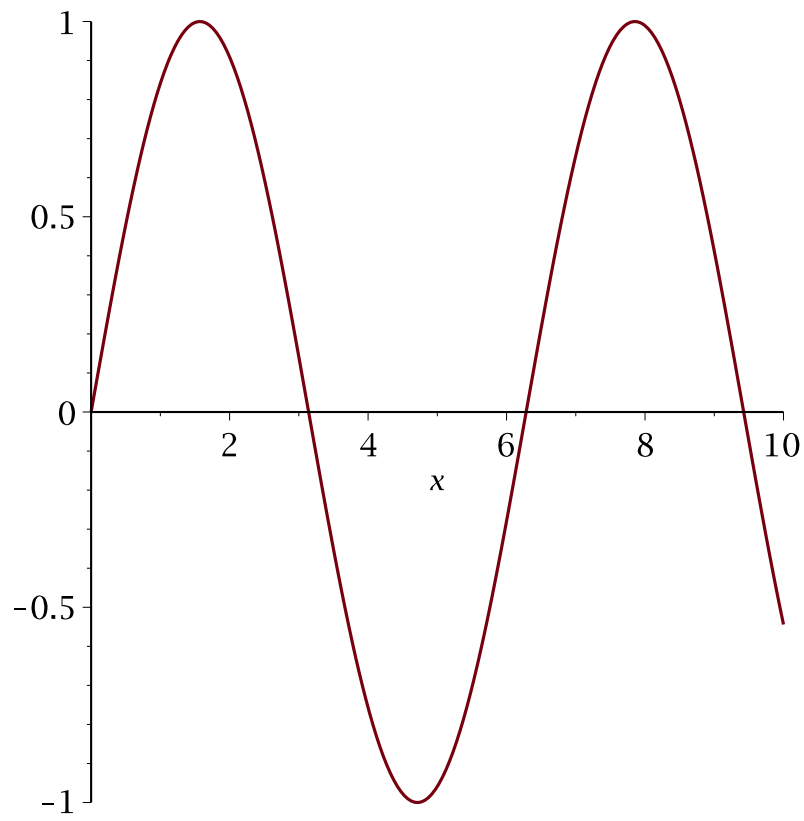
>	<i>Catalan</i> ;	0.5772156649	(5.3)
>	<i>constants</i>	<i>Catalan</i>	(5.4)
>		<i>false, γ, ∞, true, Catalan, FAIL, π</i>	(5.5)

▼ Elementare Funktionen

>	$\sin\left(\frac{\text{Pi}}{2}\right)$	1	(6.1)
>	$\cos(\text{Pi})$	-1	(6.2)
>	$\tan\left(\frac{\text{Pi}}{2}\right)$	<u>Error. (in tan) numeric exception: division by zero</u>	
>	$\text{arccot}(1);$	$\frac{1}{4} \pi$	(6.3)
>	$\exp(1)$	e	(6.4)
>	$\log(\exp(1))$	1	(6.5)

▼ Funktionen

>	f := x -> sin(x);	<i>f:= x→sin(x)</i>	(7.1)
>	<i>plot(f(x), x = 0..10);</i>		

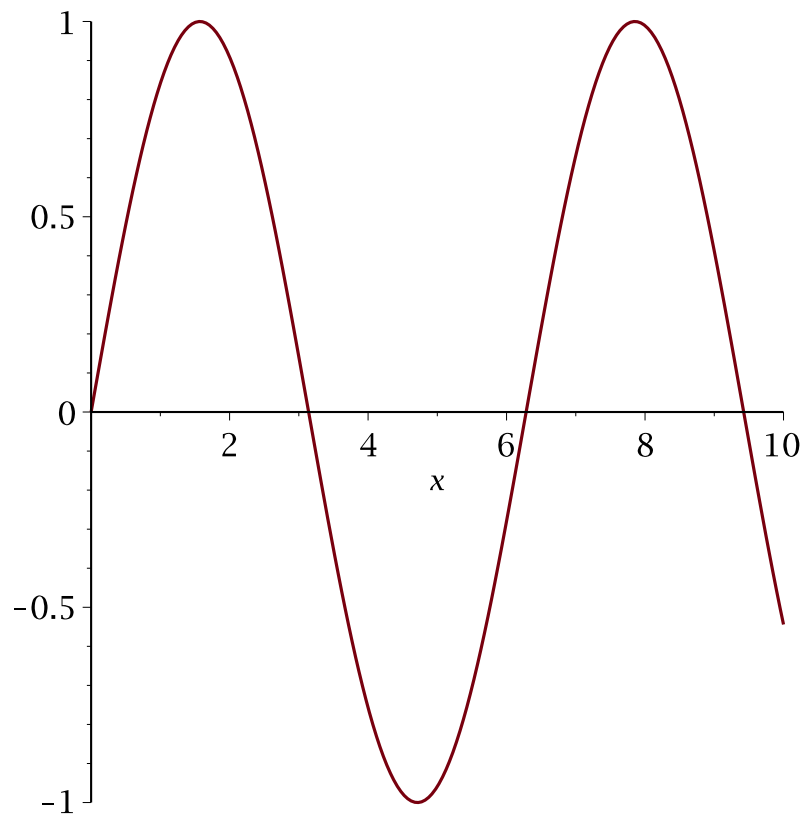


```
> ff := sin(x);
```

```
ff:= sin(x)
```

(7.2)

```
> plot(ff, x = 0..10)
```

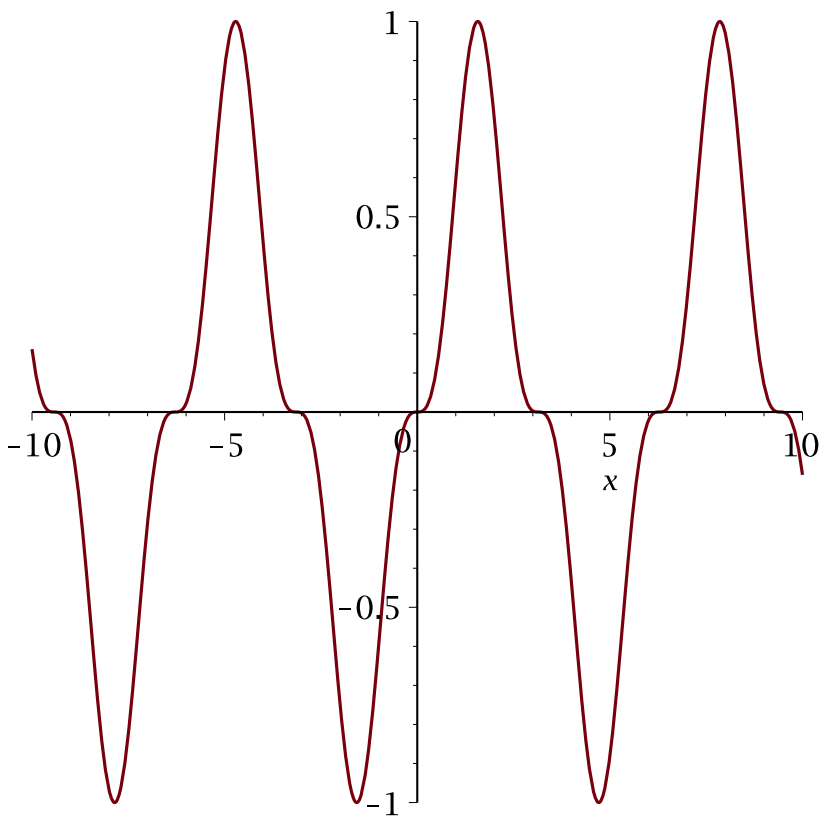


```
> g := x→x3;
```

$g := x \rightarrow x^3$

(7.3)

```
> plot(g(f(x)), x=-10..10);
```



Summen

> $sum(j, j = 0..n);$

$$\frac{1}{2} (n+1)^2 - \frac{1}{2} n - \frac{1}{2} \quad (8.1)$$

> $normal(\%);$

$$\frac{1}{2} n^2 + \frac{1}{2} n \quad (8.2)$$

> $sum(j^2, j = 0..n);$

$$\frac{1}{3} (n+1)^3 - \frac{1}{2} (n+1)^2 + \frac{1}{6} n + \frac{1}{6} \quad (8.3)$$

> $normal(\%)$

$$\frac{1}{3} n^3 + \frac{1}{2} n^2 + \frac{1}{6} n \quad (8.4)$$

> $sum(q^j, j = 0..n);$

(8.5)

$$\frac{q^{n+1}}{q-1} - \frac{1}{q-1} \quad (8.5)$$

$$> \text{sum}\left(\frac{1}{j^2}, j = 1..n\right);$$

$$-\Psi(1, n+1) + \frac{1}{6} \pi^2 \quad (8.6)$$

$$> \text{sum}\left(\frac{(-1)^{(j+1)}}{j}, j = 1..\text{infinity}\right)$$

$$\ln(2) \quad (8.7)$$

$$> \text{sum}(q^n, n = 0..\text{infinity});$$

$$-\frac{1}{q-1} \quad (8.8)$$

$$> \text{sum}(4^n, n = 0..\text{infinity});$$

$$\infty \quad (8.9)$$

Grenzwerte

$$> a := \frac{(9 \cdot x^2 - 5)}{(x-2)(x+3)}$$

$$a := \frac{9x^2 - 5}{(x-2)(x+3)} \quad (9.1)$$

$$> \text{limit}(a, x = \text{infinity});$$

$$9 \quad (9.2)$$

$$> b := \frac{n! \exp(n)}{n^n \text{sqrt}(n)};$$

$$b := \frac{n! e^n}{n^n \sqrt{n}} \quad (9.3)$$

$$> \text{limit}(b, n = \text{infinity});$$

$$\sqrt{2} \sqrt{\pi} \quad (9.4)$$

Integrale

$$> f := \frac{1}{7 + t^2}$$

$$f := \frac{1}{t^2 + 7} \quad (10.1)$$

$$> \text{int}(f, t);$$

$$\frac{1}{7} \sqrt{7} \arctan\left(\frac{1}{7} t \sqrt{7}\right) \quad (10.2)$$

$$> \text{diff}(\%, t)$$

$$(10.3)$$

$$\frac{1}{7 \left(1 + \frac{1}{7} t^2\right)} \quad (10.3)$$

> *simplify*(%);

$$\frac{1}{t^2 + 7} \quad (10.4)$$

> *int*(exp(-x²), x=-infinity..infinity);

$$\sqrt{\pi} \quad (10.5)$$

Hilfe

> ? *int*

> ? *EllipticF*

> ? *plot*

> ? *Catalan*

>