```
> # Blatt 7
> # Aufgabe 7.1
> restart;
> limit((n+1)^2/(2*n^2+5), n=infinity);
```

$$\frac{1}{2} \tag{1}$$

```
> limit((sinh(sin(x))-sin(sinh(x)))/x^7, x=0);
```

$$\frac{1}{45} \tag{2}$$

```
> sum(n*x^n, n=1..infinity, parametric);
```

$$\begin{cases} \dfrac{x}{(x-1)^2} & |x| < 1 \\ \infty & 1 \le x \\ \mathit{undefined} & \mathit{otherwise} \end{cases} \tag{3}$$

```
> f := x*exp(-x^2/2);
```

$$f := x\,\mathrm{e}^{-\frac{x^2}{2}} \tag{4}$$

```
> solve(diff(f,x)=0,x);
```

$$1, -1 \tag{5}$$

```
> solve(diff(f,x$2)=0,x);
```

$$0, \sqrt{3}, -\sqrt{3} \tag{6}$$

```
> v := int(1/(x^4+2*x^2+4),x=-infinity..infinity);
```

$$v := \frac{\sqrt{6}\,\pi}{12} \tag{7}$$

```
> evalf[20](v);
```

$$0.64127491508093204778 \tag{8}$$