```
> restart
```

Testataufgabe SW 1
Rohrer Felix

A: 101

```
> simplify( (x^2 + 2·x·y + y^2) / (x^2 - y^2) )
```

$$\frac{y+x}{x-y} \tag{1}$$

A: 102

```
> simplify( 1/(x^2 - 1) ) · ( (x + 1)/(x + 2) )
```

$$\frac{x+1}{(x^2-1)\,(x+2)} \tag{2}$$

```
>
```

A: 103

```
> factor(a^3 + 3·a^2·b + 3·a·b^2 + b^3)
```

$$(a+b)^3 \tag{3}$$

```
> factor(x^6 + x^4 - x^2 - 1)
```

$$(x-1)\,(x+1)\,(x^2+1)^2 \tag{4}$$

```
>
```

A: 104

```
> restart
> Digits := 3
```

$$Digits := 3 \tag{5}$$

```
> factor(x^4 - 7·x + 5, complex)
```

$$(x + 1.16 + 1.69\,I)\,(x + 1.16 - 1.69\,I)\,(x - 0.763)\,(x - 1.56) \tag{6}$$

```
>
```

A: 105

```
> expand( (x^2 + x + 1)·(x^3 - x^2 + 1) )
```

$$x^5 + x + 1 \tag{7}$$

```
>
```

A: 106

```
> simplify( 1/(x + 1) + 1/(x + 2) )
```

$$\frac{2x+3}{(x+1)\,(x+2)} \tag{8}$$

```
> simplify( 1/(x - 1) + 1/(x + 1) )
```

(9)

$$\frac{2x}{x^2-1} \quad (9)$$

>

A: 107

> $assume(x > 0)$

> $\ln(\exp(x))$

$$x\sim \quad (10)$$

> $\exp(\ln(x))$

$$x\sim \quad (11)$$

>

A: 108

> *restart*

> $simplify\left(\frac{\left(\sin\left(\frac{\mathrm{Pi}}{4}\right)\right)}{(1+\mathrm{sqrt}(2))\cdot(1-\mathrm{sqrt}(2))\cdot\mathrm{sqrt}(3)}\right)$

$$-\frac{1}{6}\sqrt{2}\sqrt{3} \quad (12)$$

>

A: 109

> $\sum_{k=1}^{n} k = \frac{1}{2}\cdot n\cdot(n+1)$

$$\frac{1}{2}(n+1)^2-\frac{1}{2}n-\frac{1}{2}=\frac{1}{2}n(n+1) \quad (13)$$

>

A: 110

> $\sum_{i=1}^{n} i^2 = \frac{1}{6}\cdot n\cdot(n+1)\cdot(2n+1)$

$$\frac{1}{3}(n+1)^3-\frac{1}{2}(n+1)^2+\frac{1}{6}n+\frac{1}{6}=\frac{1}{6}n(n+1)(2n+1) \quad (14)$$

>

A: 111

> *restart*

> $assume(x > 0)$

> $a := \mathrm{sqrt}(x\cdot x)+3$

$$a := x\sim+3 \quad (15)$$

> $simplify(a)$

$$x\sim+3 \quad (16)$$

>

A: 112

> *restart*

> $assume(k, integer)$

> $\sin(k\cdot\mathrm{Pi})$

$$0 \tag{17}$$

```
> cos(k·Pi)
```

$$(-1)^{k\sim} \tag{18}$$

```
>
```