

Blatt 1

Aufgabe 1

```
> restart;  
> p1 := 1 - x^98;  
> p2 := 1 - x^99;  
> p3 := 1 - x^100;  
> 'p1' = factor(p1);  
> 'p2' = factor(p2);  
> 'p3' = factor(p3);  
> 1 - x^41 = factor(1 - x^41);
```

Aufgabe 2

```
> restart;  
> ?ifactor;  
> ifactor(940);  
> 47*30/3*2;  
> ifactor(427!);
```

Aufgabe 3

```
> restart:  
(a)  
> f := x -> x^2 * (1 - x);  
> g := x -> abs(cos(x));  
> h := x -> -sqrt(x);  
> u := x -> f(g(h(x)));  
> v := x -> g(h(f(x)));  
> w := x -> h(f(g(x)));  
> plot([ u, v, w ], -3 .. 3);  
> # oder:  
plot([ u, v, w ], -5 .. 3, -10 .. 10);  
(b)  
> plot(x -> sin(x)^2, 0 .. 2*Pi, -10..10);  
> plot(x -> sin(x)^2, 0 .. 2*Pi, -10..10, style = point);
```

Aufgabe 4

```
> restart:  
> a := x -> x^3 - 8 * x^2 + 20 * x - 16;  
> b := x -> x^4 - 8 * x^3 + 9 * x^2 - 16 * x + 14;  
> h := x -> a(x) / b(x) * exp(-(x - 3)^2);  
(a)  
> plot(h, 1 .. 7, -0.01..0.2, numpoints = 10000);  
(b)
```

```
|> factor(b(x));  
|  
| (c)  
|> evalf(h(1 + 10^(-9)), 30);  
|
```