Blatt 2

▼ Aufgabe 5

```
> restart:
> f := x -> x^n;
> int(f(x), x);
> g := x -> subs(n=-1, f(x));
> int(g(x), x);
> # Schöner
> f := (x, n) -> x^n;
> int(f(x, n), x);
> int(f(x, -1), x);
```

▼ Aufgabe 6

```
> restart;
(a)
> with(plots):
> with(algcurves):
> g := (x^2 + y^2)^2 + 3 * x^2 * y - y^3;
> implicitplot(g = 0, x = -3..3, y = -2..2, numpoints = 10000);
> plot_real_curve(g, x, y);
> plot3d([ g, 0 ], x=-1..1, y=-1..1.1, color = [ blue, green ], view = -0.2..0.3);
(b)
> f := [
        1/2 * cos(t)^2 * sin(2*s),
        1/2 * sin(s) * sin(2*t),
        1/2 * cos(s) * sin(2*t)
     ];
> plot3d(f, t = 0..Pi, s = 0..Pi, numpoints = 2500, color = [ 0.7,0.6,1 ], orientation = [ 48, -55
  ], thickness = 1);
```

▼ Aufgabe 7

```
> restart;
> with(plots):
> implicitplot3d(cosh(x)^2 = y^2 + z^2, x=-3..3, y=-10..10, z = -10..10, numpoints = 10000);
```

▼ Aufgabe 8

```
> restart;
(a)
> q := x -> f(x) / g(x);
> Dq := x -> diff(q(x), x);
> simplify(int(Dq(x), x) - q(x));
(b)
> c := x -> int(f(x - xi) * g(xi), xi = 0..x);
> diff(c(x), x); Dc := x -> diff(c(x), x):
> diff(int(Dc(x), x) - c(x), x);
```