

```

> p:=x^5+3*x^4-4*x-12;
      
$$p := x^5 + 3x^4 - 4x - 12$$

> irreduc(p);
      false
> irreduc(p+1);
      true
> factor(p);
      
$$(x + 3)(x^2 - 2)(x^2 + 2)$$

> factor(p, 2^(1/2));
      
$$(x^2 + 2)(x - \sqrt{2})(x + \sqrt{2})(x + 3)$$

> factor(p, {2^(1/2), (-2)^(1/2)});
      
$$(x - \sqrt{2})(x + \sqrt{2})(x + I\sqrt{2})(x - I\sqrt{2})(x + 3)$$

> factor(p, {2^(1/2), I});
      
$$(x - \sqrt{2})(x + \sqrt{2})(x + I\sqrt{2})(x - I\sqrt{2})(x + 3)$$

> factor(p, complex);
(x + 3.) (x + 1.414213562) (x + 1.414213562 I)
(x - 1.414213562 I) (x - 1.414213562)
> factor(p, real);
(x + 3.) (x + 1.414213562) (x - 1.414213562)
(x^2 + 1.999999999)
> factor(p, I);
      
$$(x + 3)(x^2 - 2)(x^2 + 2)$$

> factor(x^8-a^8);
      
$$(-a + x)(x + a)(x^2 + a^2)(x^4 + a^4)$$

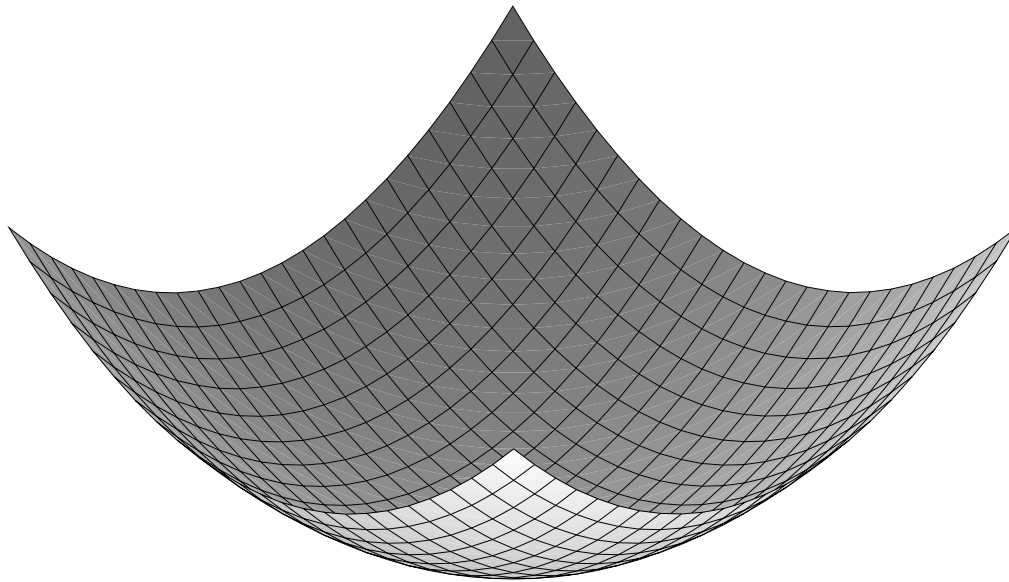
> assume(a, real);

```

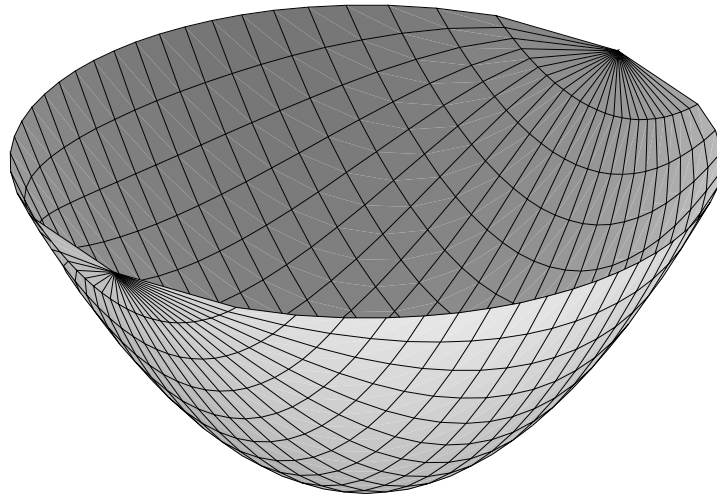
```

[ > assume (a>0) ;
[ > a:=' a' ;
[                                     a := a
[ > p;
[                                     x5 + 3 x4 - 4 x - 12
[ > Factor(p) mod 2;
[                                     x4 (x + 1)
[ > Factor(p) mod 3;
[                                     (x + 2) (x2 + 1) x (x + 1)
[ > Factor(p) mod 5;
[                                     (x2 + 2) (x2 + 3) (x + 3)
[ > plot3d(x^2+y^2, x=-1..1, y=-1..1) ;

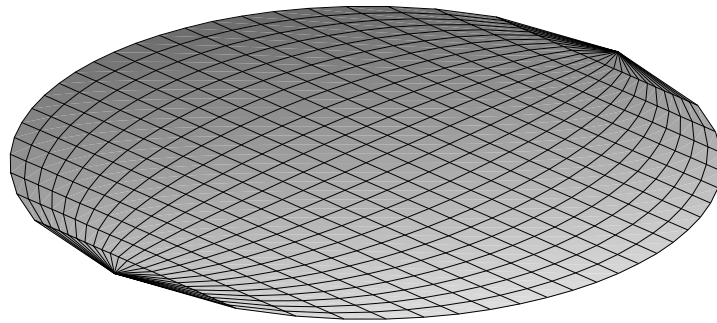
```



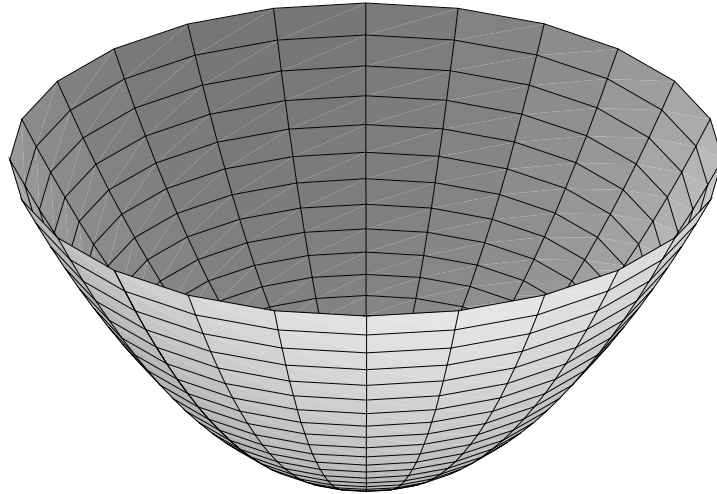
```
> plot3d(x^2+y^2, x=-1..1, y=-sqrt(1-x^2)..sqrt(1-x^2));
```



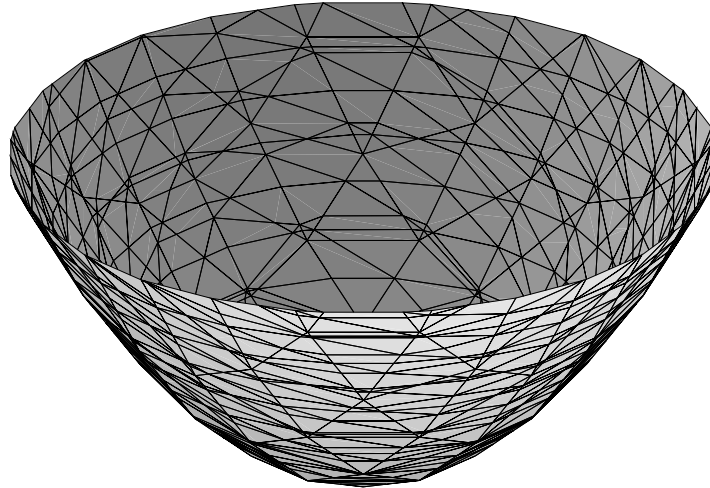
```
> plot3d(0, x=-1..1, y=-sqrt(1-x^2)..sqrt(1-x^2));
```



```
> plot3d([r,phi,r^2],phi=0..2*Pi,r=0..1,coords=cylindrical);
```



```
[ > with(plots):  
[ > implicitplot3d(x^2+y^2=z, x=-1..1, y=-1..1, z=  
0..1);
```



```
> N:=120;
```

```
      N := 120
```

```
> A:=array(0..N,0..N);
```

```
      A := array(0 .. 120, 0 .. 120, [ ])
```

```
> for i from 0 to N do
```

```
> for j from 0 to N do
```

```
> A[i,j]:=0;
```

```
> z:=0; c:=-2.2-1.5*I+3*(j+I*i)/N;
```

```
> for k from 1 to 30 do
```

```
> z:=evalf(z^2+c); if abs(z)>2 then  
  A[i,j]:=20+k; break; fi;
```

```
> od;
```

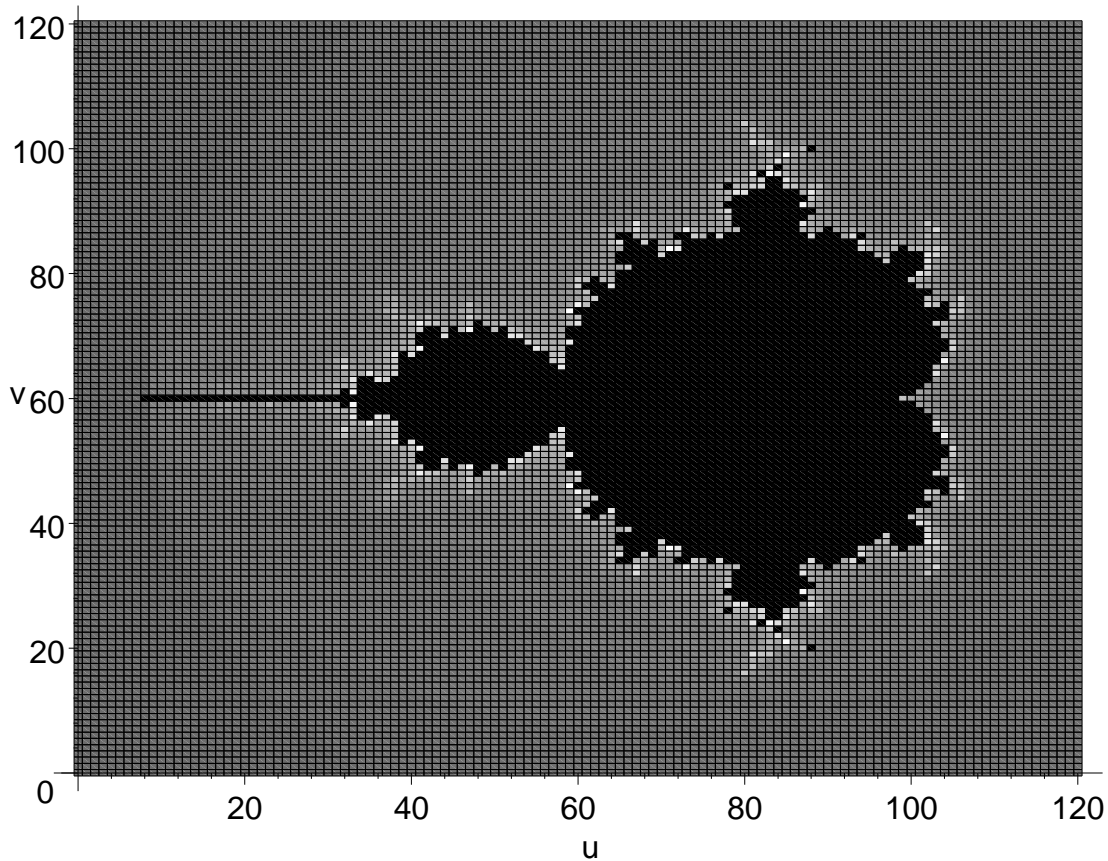
```

> od;
> od;
> A[2,2];

                21
> A[0,0];

                21
> with(plots):
> densityplot(A[u,v],u=0..N,v=0..N,grid=[N+1,
N+1]);

```

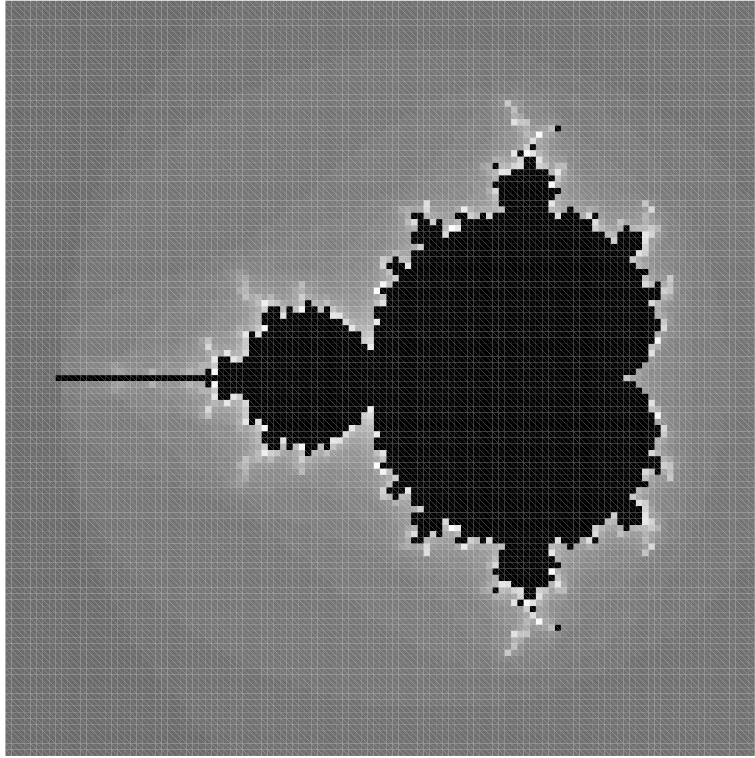


```

> densityplot(A[u,v],u=0..N,v=0..N,grid=[N+1,
N+1],axes=none,style=patchnogrid,scaling=co
nstrained);

```





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