https://github.com/t-o-k/Maxima-bezier/bezier_surface_3d.wxmx

(%i1)
```
kill(all)$
```

(%i1)
```
load("draw")$
```

(%i2)
```
load("bezier")$
```

(%i3)
```
points_x:
  matrix(
    [  0.0,  1.0, 2.0,  3.0 ],
    [  0.0,  1.0, 2.0,  4.0 ],
    [  0.0,  1.0, 2.0,  2.5 ],
    [  0.0,  1.0, 2.0,  3.0 ]
  )
$
```

(%i4)
```
points_y:
  matrix(
    [  0.0,  0.0,  1.0,  0.0 ],
    [  1.0,  1.0,  2.0,  1.0 ],
    [  2.0,  2.0,  3.0,  2.0 ],
    [  3.0,  3.0,  5.0,  3.0 ]
  )
$
```

(%i5)
```
points_z:
  matrix(
    [  2.0,  0.0,  0.0, -3.0 ],
    [ -2.0, -3.0, -2.0,  3.0 ],
    [  0.0, -4.0,  0.0,  2.0 ],
    [  2.0,  0.0,  0.0, -3.0 ]
  )
$
```

(%i6)
```
define(surface_x(u, v), bezier_function_2a(points_x, u, v))$
```

(%i7)
```
define(surface_y(u, v), bezier_function_2a(points_y, u, v))$
```

(%i8)
```
define(surface_z(u, v), bezier_function_2a(points_z, u, v))$
```

```
(%i9) expand(surface_x(u, v));
```

$$(\%o9)\quad 4.5\,u^3\,v^3-7.5\,u^3\,v^2+3.0\,u^3\,v+3.0\,u$$

```
(%i10) expand(surface_y(u, v));
```

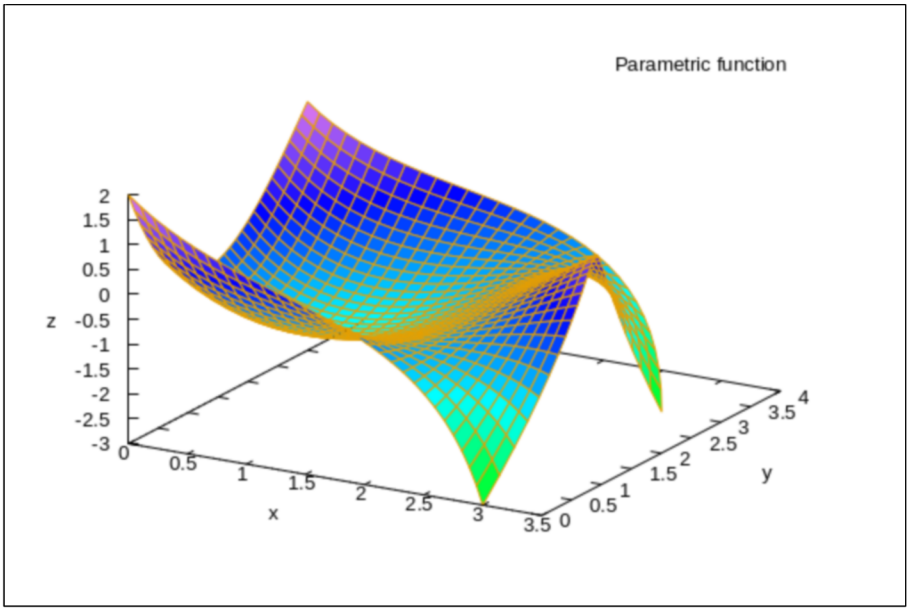
$$(\%o10)\quad -3.0\,u^3\,v^3+3.0\,u^2\,v^3+3.0\,v-3.0\,u^3+3.0\,u^2$$

```
(%i11) expand(surface_z(u, v));
```

$$(\%o11)\quad 36.0\,u^3\,v^3-54.0\,u^2\,v^3+27.0\,u\,v^3-6.0\,v^3-57.0\,u^3\,v^2+54.0\,u^2\,v^2-36.0\,u\,v^2+18.0\,v^2+21.0\,u^3\,v+9.0\,u\,v-12.0\,v-5.0\,u^3+6.0\,u^2-6.0\,u+2.0$$

```
(%i12) wxplot3d(
         [
            surface_x(u, v),
            surface_y(u, v),
            surface_z(u, v)
         ],
         [ u, 0, 1 ],
         [ v, 0, 1 ]
       );
```

(%t12)



(%o12)