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

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

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

(%i3)
```
weights_x_2a:
  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)
```
weights_y_2a:
  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)
```
weights_z_2a:
  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(weights_x_2a, u, v)
)$
```

(%i7)
```
expand(surface_x(u, v));
```

(%o7) $$4.5\,u^3\,v^3-7.5\,u^3\,v^2+3.0\,u^3\,v+3.0\,u$$

```
(%i8) define(
        surface_y(u, v),
        bezier_function_2a(weights_y_2a, u, v)
      )$

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

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

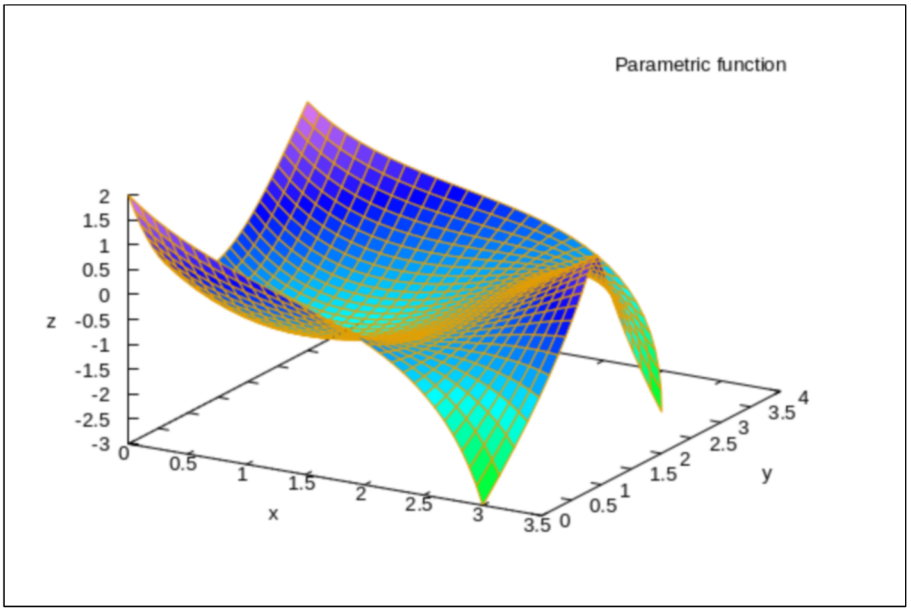
```
(%i13) define(
         surface_z(u, v),
         bezier_function_2a(weights_z_2a, u, v)
       )$

(%i14) expand(surface_z(u, v));
```

$$(\%o14)\quad 36.0\,u^3\,v^3-54.0\,u^2\,v^3+27.0\,u\,v^3-6.0\,v^3-57.0\,u^3\,v^2+54.0\,u^2\,v^2-36.0\,u\,v^2+18.0\,v^2+21.0\,u^3\,v+9.0\,u\,v-12.0\,v-5.0\,u^3+6.0\,u^2-6.0\,u+2.0$$

```
(%i15) wxplot3d(
         [
           surface_x(u, v),
           surface_y(u, v),
           surface_z(u, v)
         ],
         [ u, 0, 1 ],
         [ v, 0, 1 ]
       );
```

(%t15)



(%o15)