https://github.com/t-o-k/Maxima-bezier/rational_bezier_curves_2d.wxmx

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

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

(%i3)
```
tau: 2*%pi$
```

(%i4)
```
angle: tau/4/2;  /* No. of parts is 4 */
```

(angle) $\frac{\pi}{4}$

(%i5)
```
weights: matrix([ 1, cos(angle), 1 ]);
```

(weights) $\begin{pmatrix} 1 & \frac{1}{\sqrt{2}} & 1 \end{pmatrix}$

(%i6)
```
points1_x: matrix([ 3, 5, 5 ])$
```

(%i7)
```
points1_y: matrix([ 2, 2, 4 ])$
```

(%i8)
```
points2_x: matrix([ 5, 5, 3 ])$
```

(%i9)
```
points2_y: matrix([ 4, 6, 6 ])$
```

(%i10)
```
points3_x: matrix([ 3, 1, 1 ])$
```

(%i11)
```
points3_y: matrix([ 6, 6, 4 ])$
```

(%i12)
```
points4_x: matrix([ 1, 1, 3 ])$
```

(%i13)
```
points4_y: matrix([ 4, 2, 2 ])$
```

(%i14)
```
define(f1_x(s), rational_bezier_function_1a(points1_x, weights, s));
```

(%o14) $f1_x(s) := \frac{5\,s^2 + 5\sqrt{2}\,(1-s)\,s + 3\,(1-s)^2}{s^2 + \sqrt{2}\,(1-s)\,s + (1-s)^2}$

(%i15) define(f1_y(s), rational_bezier_function_1a(points1_y, weights, s));

(%o15) $$f1_y(s):=\frac{4\,s^2+2^{3/2}\,(1-s)\,s+2\,(1-s)^2}{s^2+\sqrt{2}\,(1-s)\,s+(1-s)^2}$$

(%i16) define(f2_x(s), rational_bezier_function_1a(points2_x, weights, s));

(%o16) $$f2_x(s):=\frac{3\,s^2+5\sqrt{2}\,(1-s)\,s+5\,(1-s)^2}{s^2+\sqrt{2}\,(1-s)\,s+(1-s)^2}$$

(%i17) define(f2_y(s), rational_bezier_function_1a(points2_y, weights, s));

(%o17) $$f2_y(s):=\frac{6\,s^2+3\,2^{3/2}\,(1-s)\,s+4\,(1-s)^2}{s^2+\sqrt{2}\,(1-s)\,s+(1-s)^2}$$

(%i18) define(f3_x(s), rational_bezier_function_1a(points3_x, weights, s));

(%o18) $$f3_x(s):=\frac{s^2+\sqrt{2}\,(1-s)\,s+3\,(1-s)^2}{s^2+\sqrt{2}\,(1-s)\,s+(1-s)^2}$$

(%i19) define(f3_y(s), rational_bezier_function_1a(points3_y, weights, s));

(%o19) $$f3_y(s):=\frac{4\,s^2+3\,2^{3/2}\,(1-s)\,s+6\,(1-s)^2}{s^2+\sqrt{2}\,(1-s)\,s+(1-s)^2}$$

(%i20) define(f4_x(s), rational_bezier_function_1a(points4_x, weights, s));

(%o20) $$f4_x(s):=\frac{3\,s^2+\sqrt{2}\,(1-s)\,s+(1-s)^2}{s^2+\sqrt{2}\,(1-s)\,s+(1-s)^2}$$

(%i21) define(f4_y(s), rational_bezier_function_1a(points4_y, weights, s));

(%o21) $$f4_y(s):=\frac{2\,s^2+2^{3/2}\,(1-s)\,s+4\,(1-s)^2}{s^2+\sqrt{2}\,(1-s)\,s+(1-s)^2}$$

(%i22) curve_1: [parametric, f1_x(s), f1_y(s), [s, 0, 1]]$

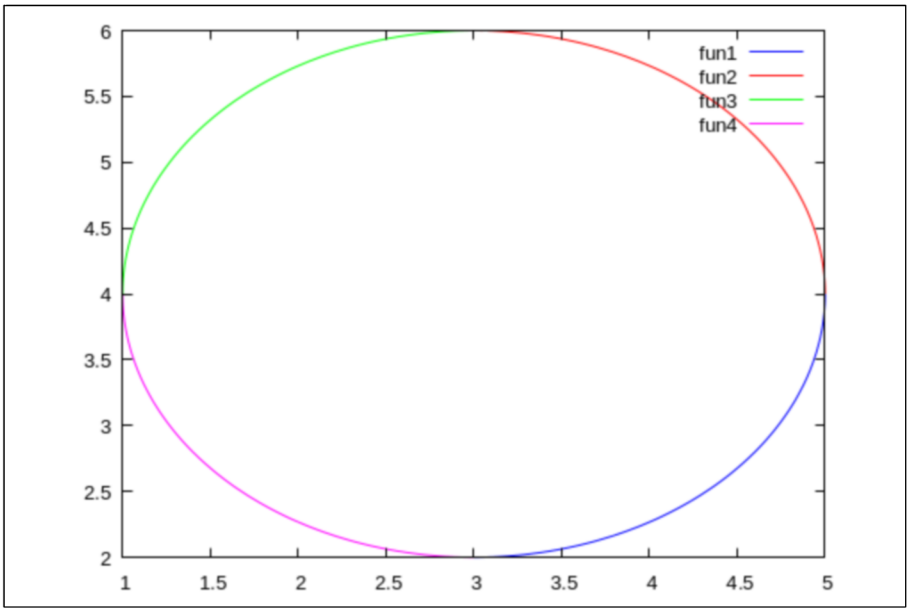
(%i23) curve_2: [parametric, f2_x(s), f2_y(s), [s, 0, 1]]$

(%i24) curve_3: [parametric, f3_x(s), f3_y(s), [s, 0, 1]]$

(%i25) curve_4: [parametric, f4_x(s), f4_y(s), [s, 0, 1]]$

(%i26)
```
wxplot2d([ curve_1, curve_2, curve_3, curve_4 ]);
/* Note that since the aspect ratio is not 1 the circle appears as an ellipse. */
```

(%t26)



(%o26)