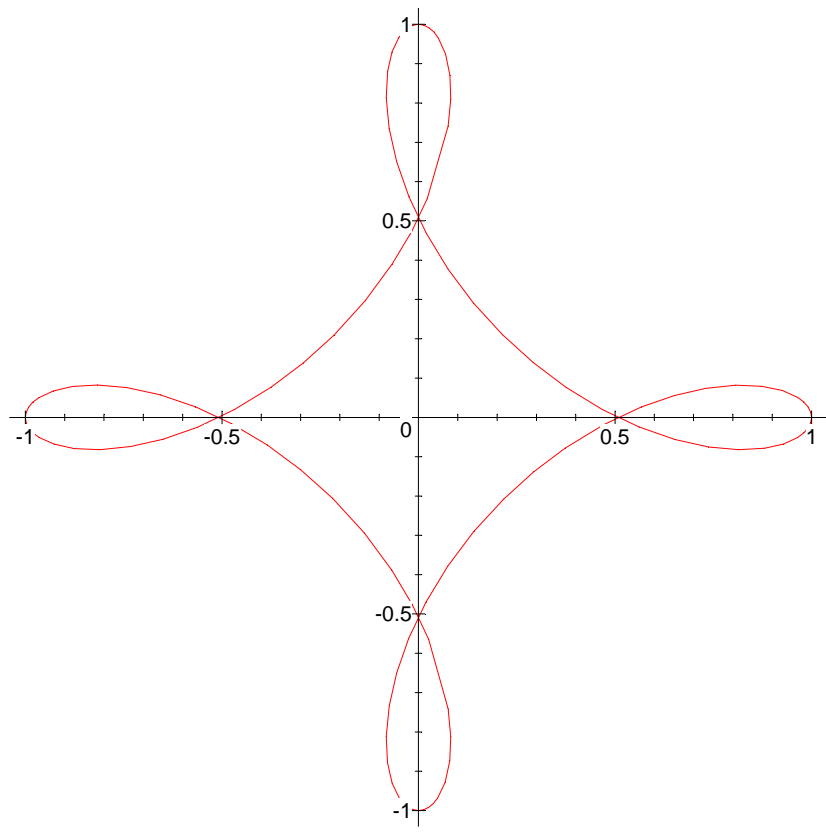


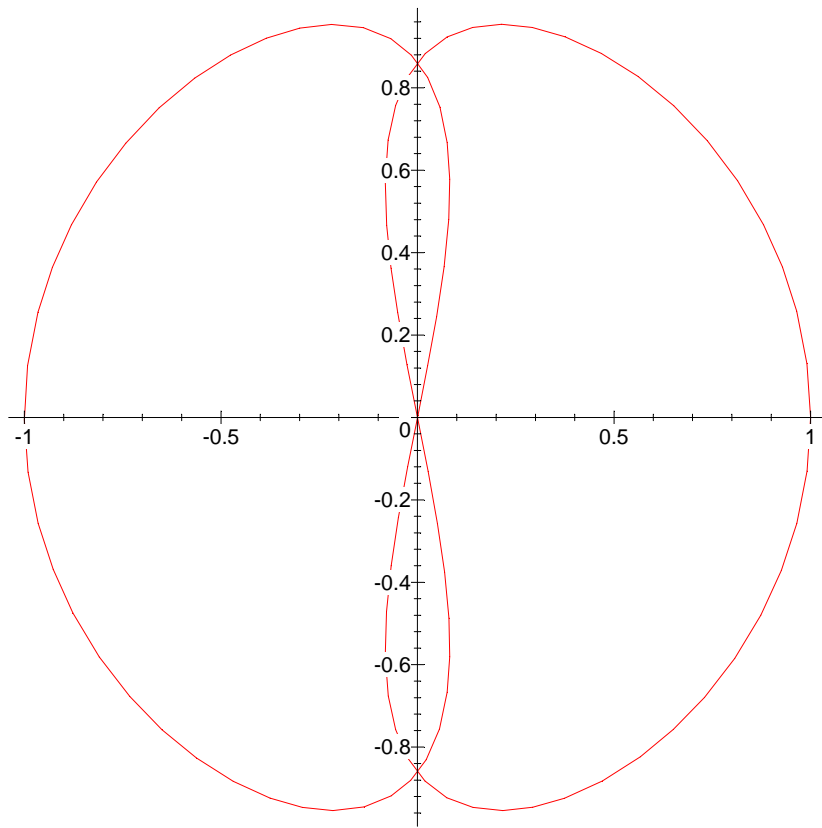
```

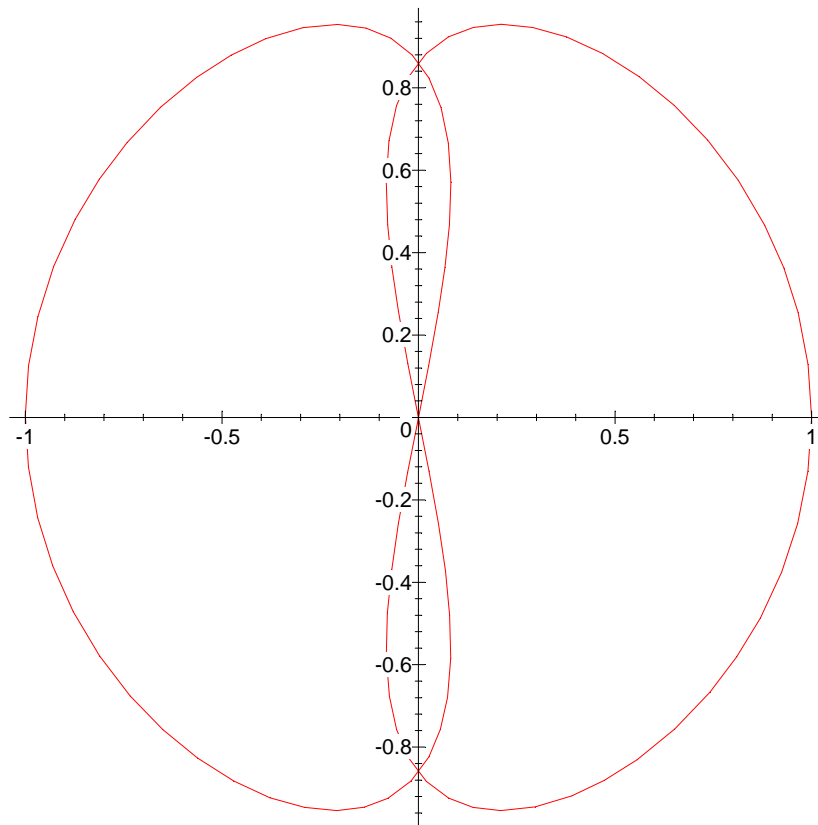
> {(Scientific Approach to Yin-Yang Geometry by Sergey Yu.
Shishkov, RUSSIA, Shishkovser@rambler.ru)
Here is given (below) the most generalized definition of the
astroid-like hypocycloid as the trajectory of a point P of a
rotating with angular velocity "omega1"=-3 circle of radius
"radius1"=a, with centre of which also being rotating around the
origin by the circle of radius "radius2"=1-a , and angular
velocity "omega1"=1, so that "radius1" +radius2"=-3, and
"omega2"/"omega1" =-3. Then for coordinates X[t], Y[t] of this
point P we have: X[t]=(a)*cos(t)+(1-a)*cos(3*t);
Y[t]=(a)*sin(t)-(1-a)*sin(3*t);
1-X[t]^2-Y[t]^2=factor(simplify(expand(1-((a)*cos(t)+(1-a)*cos(3
*t))^2-((a)*sin(t)-(1-a)*sin(3*t))^2)))=16*a*cos(t)^2*(cos(t)-1)
*(cos(t)+1)*(-1+a)=16*a*cos(t)^2*(cos(t)^2-1)*(-1+a)=16*a*cos(t)
^2*(sin(t)^2)*(1-a)=FULL SQUARE! =>
If Z[t]=4*cos(t)*sin(t)*(a*(1-a))^(1/2), then
X[t]^2+Y[t]^2+z[t]^2=1(i.e., On the unit SPHERE!!!).
With different values of the parameter a : 0<a<1 we obtain a
whole class of astroid-like hypocycloids with FOUR PARTS. Below
is given the Maple 5.4 Text program for plotting these
trajectories.};
> a=0.65;plot([(a)*cos(t)+(1-a)*cos(3*t), (a)*sin(t)-(1-a)*sin(3*t)
,t=0..2*Pi]);
plot([(a)*cos(t)+(1-a)*cos(3*t), 4*cos(t)*sin(t)*(a*(1-a))^(1/2),
t=0..2*Pi]);
plot([(a)*sin(t)-(1-a)*sin(3*t), 4*cos(t)*sin(t)*(a*(1-a))^(1/2),
t=0..2*Pi]);

```

.65 = .65







```
> factor(simplify(expand(1 - (b)*cos(t) + (1-b)*cos(3*t))^2 - ((b)*sin(t) - (1-b)*sin(3*t))^2));
```

$$16 b \cos(t)^2 (\cos(t) - 1) (\cos(t) + 1) (-1 + b)$$

```
>
```

```
> The Optimal Value for the parametr a is a=0.6339, as will be shown elsewhere. Let us call it "THE YIN-YANG PLATINUM SECTION"
```

```
>
```

```
[>a:=0.6339;plot([(a)*cos(t)+(1-a)*cos(3*t),(a)*sin(t)-(1-a)*sin(3*t),t=0..2*Pi]);
```

```
plot([(a)*cos(t)+(1-a)*cos(3*t),4*cos(t)*sin(t)*(a*(1-a))^(1/2),t=0..2*Pi]);
```

```
plot([(a)*sin(t)-(1-a)*sin(3*t),4*cos(t)*sin(t)*(a*(1-a))^(1/2),t=0..2*Pi]);
```