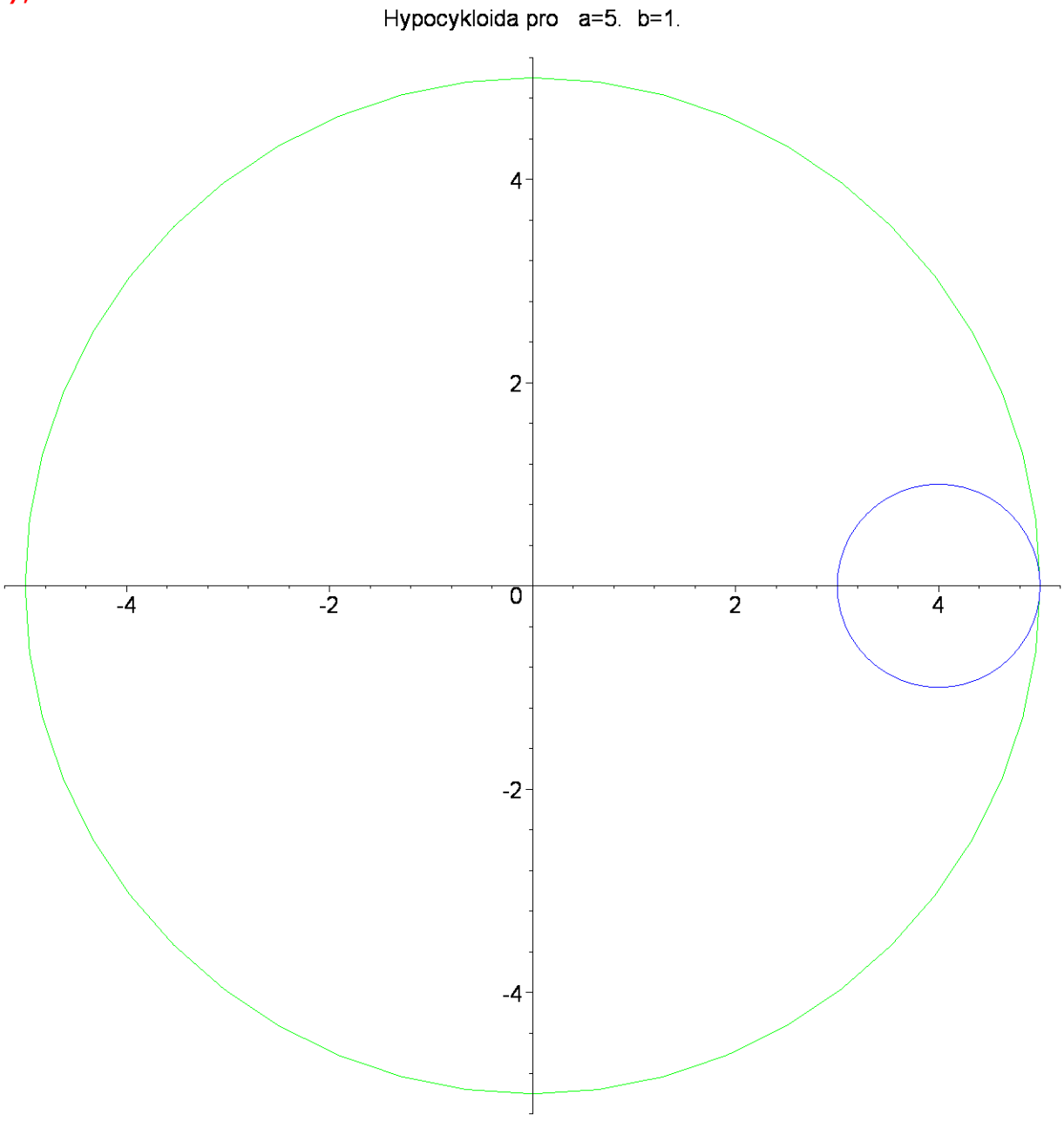
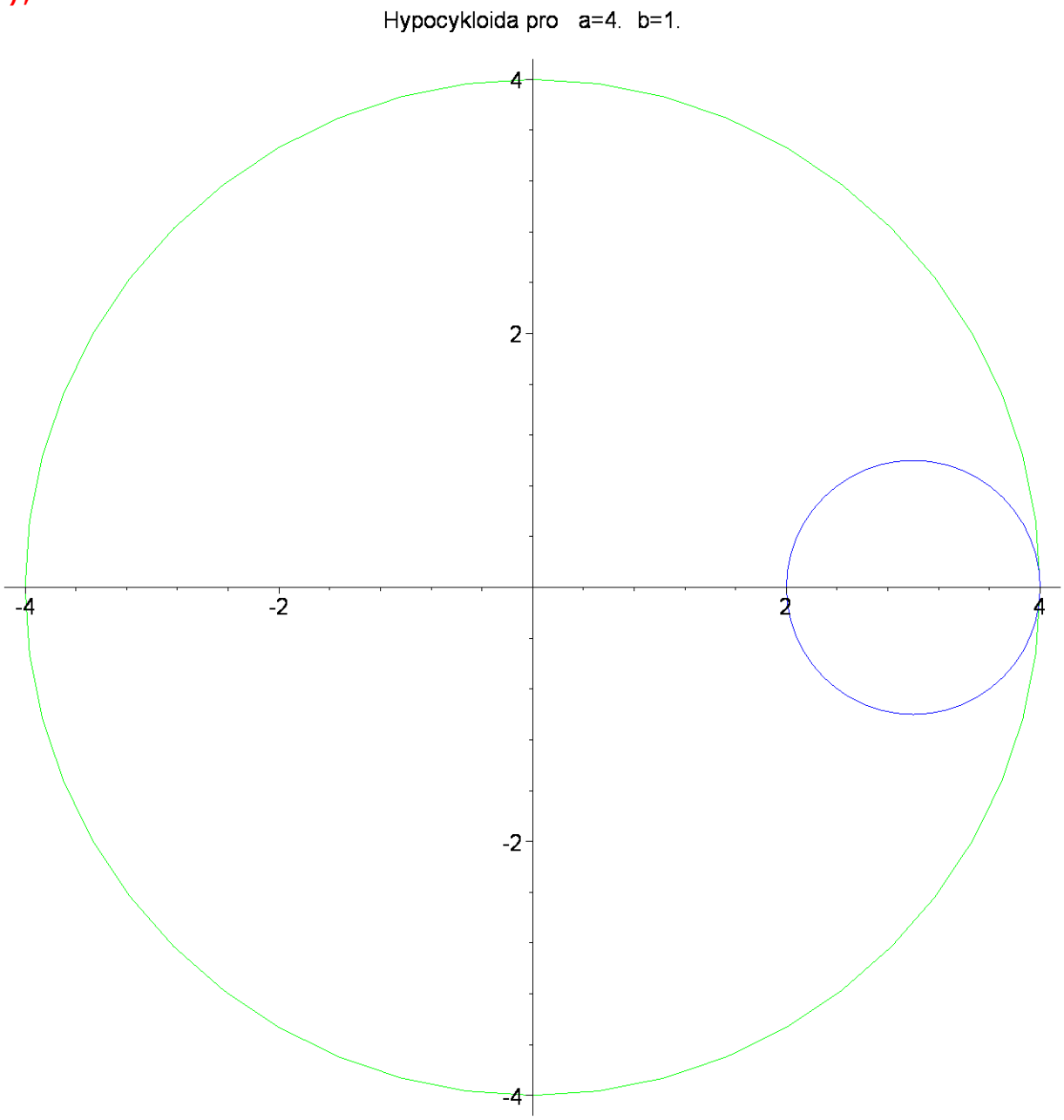
Trochoida - pohyb hřebíku na kole

```
> with(plots):
> a:=5:
> b:=1:
> rang:=0..2*Pi:
> fra:=50:
> A1:=animate([(a-b)*cos(x)-b*sin(t),(a-b)*sin(x)-b*cos(t),t=0..2*Pi],x=rang,fr
  ames=fra,color=BLUE):
> A2:=animate([(a-b)*cos(t*x)+b*cos(t*x*(a-b)/b),(a-b)*sin(t*x)-b*sin(t*x*(a-b)
  /b),t=0..1],x=rang,frames=fra,color=RED):
> A3:=animate([a*cos(t),a*sin(t),t=0..2*Pi],x=rang,frames=fra,color=GREEN):
> A4:=animate([(a-b)*cos(x)+t*b*cos(x*(a-b)/b),(a-b)*sin(x)-t*b*sin(x*(a-b)/b),
  t=0..1],x=rang,frames=fra,color=BLACK,title=cat(`Hypocykloida pro
  a=`,convert(evalf(a),name),`  b=`,convert(evalf(b),name))):
> D1:=display({A1,A2}):D2:=display({A3,A4}):display({D1,D2},scaling=constrained
  );
```



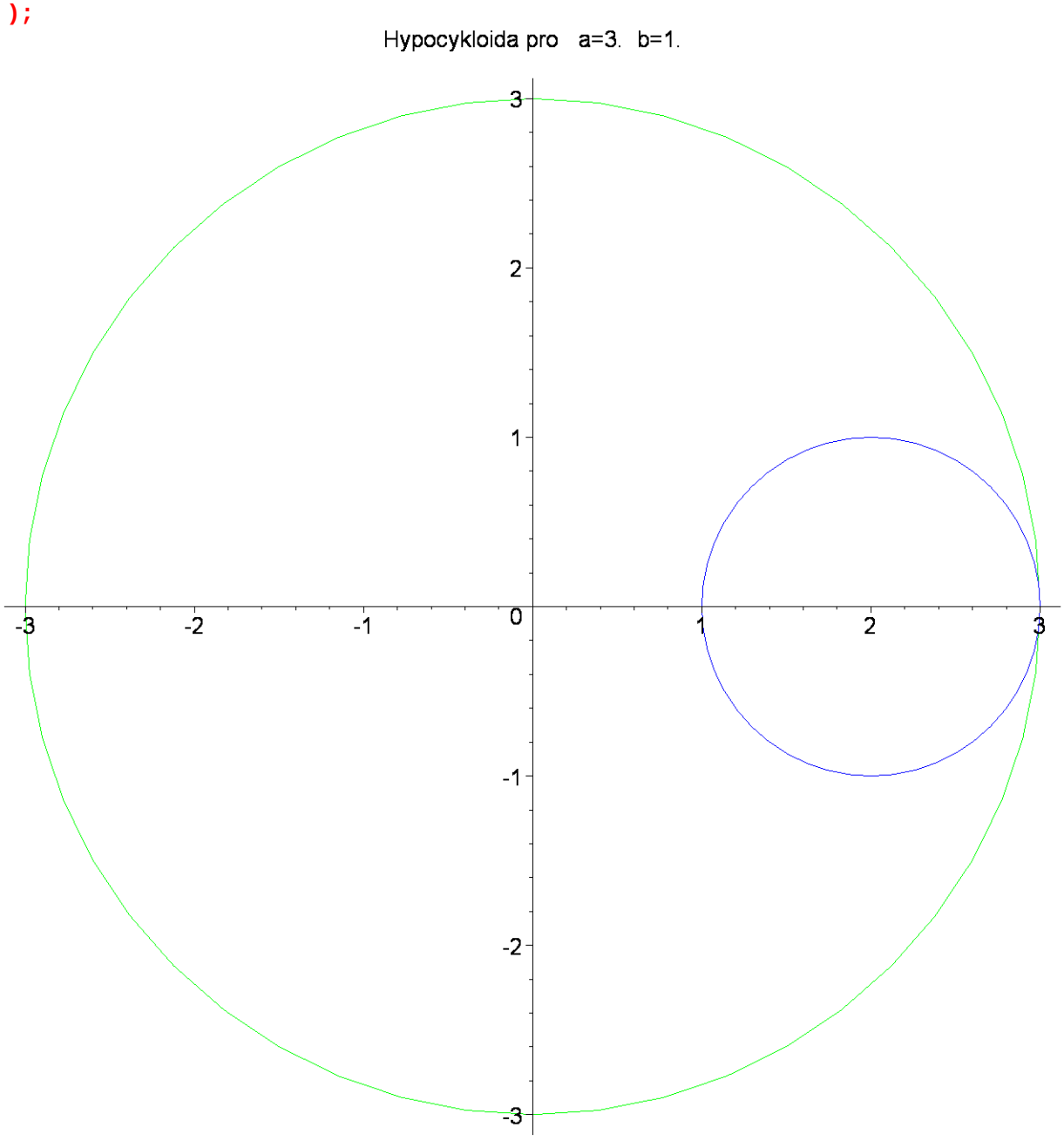

```
>
>
```

```
> a:=4:
> b:=1:
> rang:=0..2*Pi:
> fra:=50:
> A1:=animate([(a-b)*cos(x)-b*sin(t),(a-b)*sin(x)-b*cos(t),t=0..2*Pi],x=rang,fr
  ames=fra,color=BLUE):
> A2:=animate([(a-b)*cos(t*x)+b*cos(t*x*(a-b)/b),(a-b)*sin(t*x)-b*sin(t*x*(a-b)
  /b),t=0..1],x=rang,frames=fra,color=RED):
> A3:=animate([a*cos(t),a*sin(t),t=0..2*Pi],x=rang,frames=fra,color=GREEN):
> A4:=animate([(a-b)*cos(x)+t*b*cos(x*(a-b)/b),(a-b)*sin(x)-t*b*sin(x*(a-b)/b),
  t=0..1],x=rang,frames=fra,color=BLACK,title=cat(`Hypocykloida pro
  a=`,convert(evalf(a),name),`  b=`,convert(evalf(b),name))):
> D1:=display({A1,A2}):D2:=display({A3,A4}):display({D1,D2},scaling=constrained
  );
```



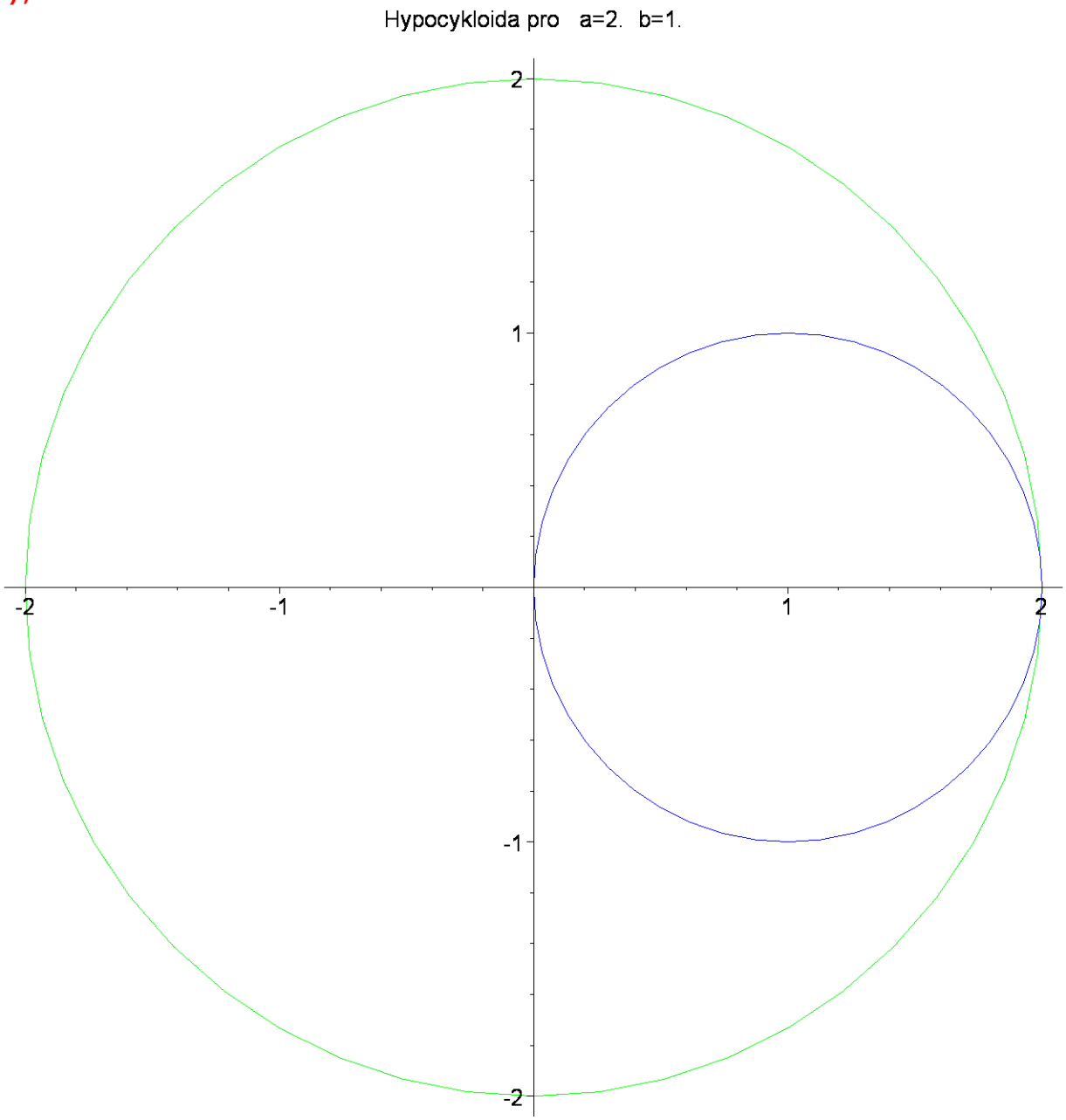

```
>
>
>
> a:=3:
> b:=1:
```

```
> rang:=0..2*Pi:
> fra:=50:
> A1:=animate([(a-b)*cos(x)-b*sin(t),(a-b)*sin(x)-b*cos(t),t=0..2*Pi],x=rang,fr
  ames=fra,color=BLUE):
> A2:=animate([(a-b)*cos(t*x)+b*cos(t*x*(a-b)/b),(a-b)*sin(t*x)-b*sin(t*x*(a-b)
  /b),t=0..1],x=rang,frames=fra,color=RED):
> A3:=animate([a*cos(t),a*sin(t),t=0..2*Pi],x=rang,frames=fra,color=GREEN):
> A4:=animate([(a-b)*cos(x)+t*b*cos(x*(a-b)/b),(a-b)*sin(x)-t*b*sin(x*(a-b)/b),
  t=0..1],x=rang,frames=fra,color=BLACK,title=cat(`Hypocykloida pro
  a=`,convert(evalf(a),name),`  b=`,convert(evalf(b),name))):
> D1:=display({A1,A2}):D2:=display({A3,A4}):display({D1,D2},scaling=constrained
  );
```




```
> 
> 
> 
> 
> a:=2:
> b:=1:
> rang:=0..2*Pi:
```

```
> fra:=50:
> A1:=animate([(a-b)*cos(x)-b*sin(t),(a-b)*sin(x)-b*cos(t),t=0..2*Pi],x=rang,fr
  ames=fra,color=BLUE):
> A2:=animate([(a-b)*cos(t*x)+b*cos(t*x*(a-b)/b),(a-b)*sin(t*x)-b*sin(t*x*(a-b)
  /b),t=0..1],x=rang,frames=fra,color=RED):
> A3:=animate([a*cos(t),a*sin(t),t=0..2*Pi],x=rang,frames=fra,color=GREEN):
> A4:=animate([(a-b)*cos(x)+t*b*cos(x*(a-b)/b),(a-b)*sin(x)-t*b*sin(x*(a-b)/b),
  t=0..1],x=rang,frames=fra,color=BLACK,title=cat(`Hypocykloida pro
  a=`,convert(evalf(a),name),`  b=`,convert(evalf(b),name))):
> D1:=display({A1,A2}):D2:=display({A3,A4}):display({D1,D2},scaling=constrained
  );
```




```
>
>
>
>
>
>
>
>
```

[>
[>
[>