

```

In[*]:= c = 2 (1 - Cos[t]) {Cos[t], Sin[t]} + {1, 0}
J = {0, 2 Pi}
nn = 25
hodnoty = Table[J[[1]] * (1 - i / nn) + J[[2]] * i / nn, {i, 0, nn}];
body = N[Table[c /. {t -> hodnoty[[i]]}, {i, 1, Length[hodnoty]}], 10];
speed = Sqrt[Simplify[D[c, t].D[c, t]]]
Show[ParametricPlot[c, {t, J[[1]], J[[2]]}], Graphics[Line[body]]]
Plot[speed, {t, J[[1]], J[[2]]}
draha = Integrate[speed, t]
Plot[draha, {t, J[[1]], J[[2]]}
delka = Integrate[speed, {t, J[[1]], J[[2]]}
delkaLomCary = Sum[Norm[body[[i + 1]] - body[[i]]], {i, 1, Length[body] - 1}]
delka - delkaLomCary
chyba25 =
  0.0940660218834452065644831201815879240924049628514460990792`46.94329080137866
chyba50 =
  0.0236389589996238590289036679546099148751526347508577311281`46.04076828391178
chyba100 =
  0.0059184183979081297440197660541064191513385153110463160534`45.13787463312511
chyba25 / chyba50
chyba50 / chyba100
dc = D[c, t];
ddc = D[dc, t];
krivostZ = Simplify[Det[{dc, ddc}] / speed^3]
Plot[krivostZ, {t, J[[1]], J[[2]]}, AxesOrigin -> {0, 0}, AspectRatio -> Automatic]

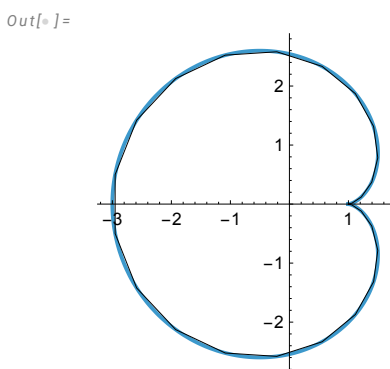
```

```
Out[*]= {1 + 2 (1 - Cos[t]) Cos[t], 2 (1 - Cos[t]) Sin[t]}
```

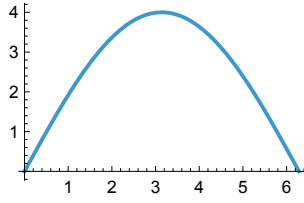
```
Out[*]= {0, 2 π}
```

```
Out[*]= 25
```

```
Out[*]=  $\sqrt{8 - 8 \cos[t]}$ 
```



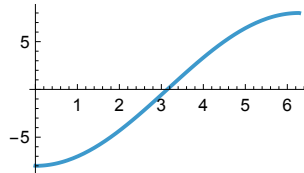
Out[*]=



Out[*]=

$$-2 \sqrt{8 - 8 \cos[t]} \cot\left[\frac{t}{2}\right]$$

Out[*]=



Out[*]=

16

Out[*]=

15.9059340

Out[*]=

0.0940660

Out[*]=

3.979279370336992274960385403351905426103262925

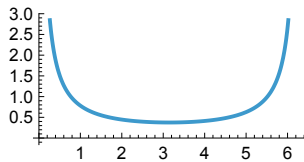
Out[*]=

3.99413448160053539799566366397491179735319286

Out[*]=

$$\frac{3}{4 \sqrt{2 - 2 \cos[t]}}$$

Out[*]=



In[*]:=

In[*]:=

```

In[*]:= c1 = c /. {t -> 2 Pi * s ^ 2}
J1 = {0, 1}
nn = 30
hodnoty = Table[J1[[1]] * (1 - i / nn) + J1[[2]] * i / nn, {i, 0, nn}];
body1 = N[Table[c1 /. {s -> hodnoty[[i]]}, {i, 1, Length[hodnoty]}]];
speed1 = Sqrt[Simplify[D[c1, s].D[c1, s]]]
Show[ParametricPlot[c1, {s, J1[[1]], J1[[2]]}], Graphics[Point[body1]]]
Plot[speed1, {s, J1[[1]], J1[[2]]}]
delka1 = Integrate[speed1, {s, J1[[1]], J1[[2]]}]
dc1 = D[c1, s];
ddc1 = D[dc1, s];
krivostZ1 = Simplify[Det[{dc1, ddc1}] / speed1 ^ 3]
Plot[krivostZ1, {s, J1[[1]], J1[[2]]}, AxesOrigin -> {0, 0},
  AspectRatio -> Automatic, PlotRange -> {{0, 1}, {0, 3}}]

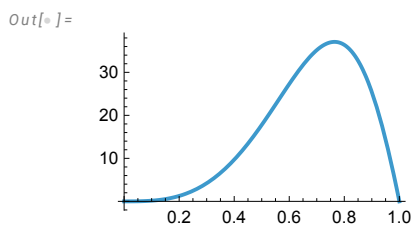
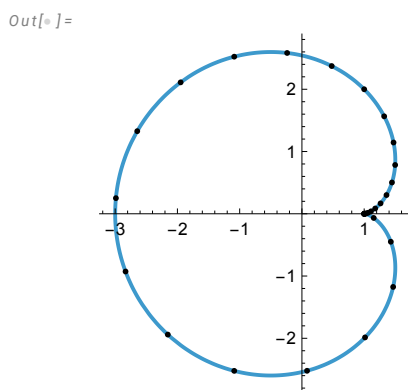
```

```
Out[*]= {1 + 2 (1 - Cos[2 π s2]) Cos[2 π s2], 2 (1 - Cos[2 π s2]) Sin[2 π s2]}
```

```
Out[*]= {0, 1}
```

```
Out[*]= 30
```

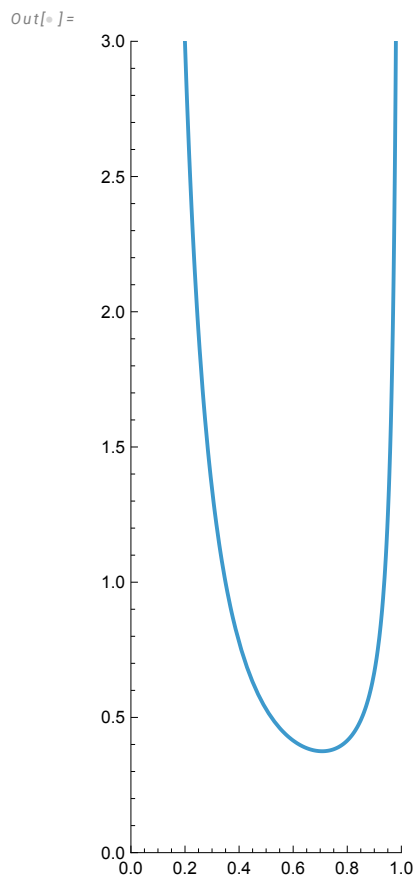
```
Out[*]= 16 π √{s2 Sin[π s2]2}
```



```
Out[*]= 16
```

```
Out[*]=
```

$$\frac{3 s}{8 \sqrt{s^2 \sin[\pi s^2]^2}}$$



In[*]:= **krivostZ**

Out[*]=

$$\frac{3}{4 \sqrt{2 - 2 \cos[t]}}$$

In[*]:= **krivostZ1**

Out[*]=

$$\frac{3 s}{8 \sqrt{s^2 \sin[\pi s^2]^2}}$$

In[*]:= **Simplify[krivostZ1^2 - (krivostZ /. {t -> 2 Pi * s^2})^2]**

Out[*]=

0