In[920]:=

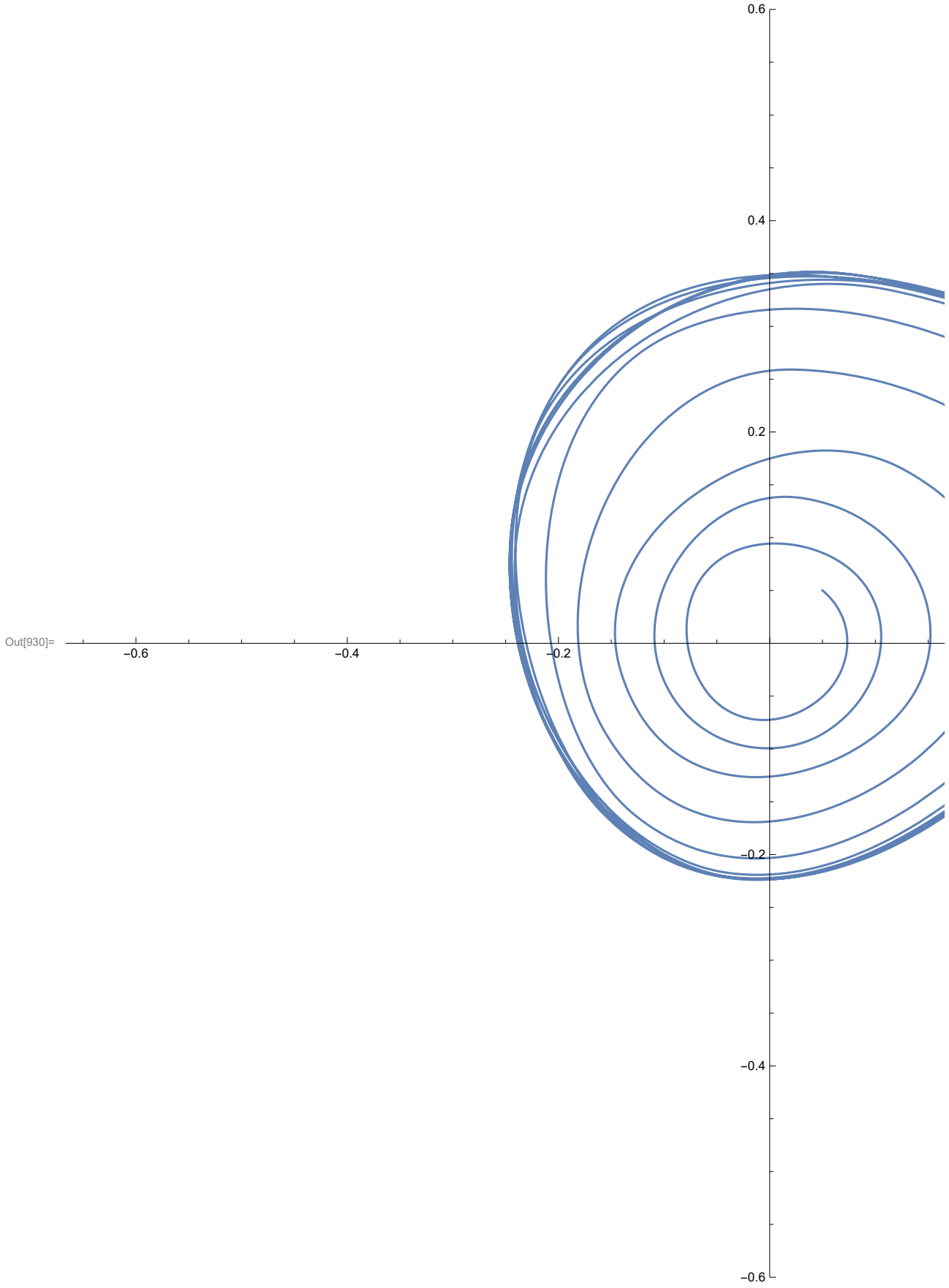
```
Clear["Global`*"]
tMax = 1000;
μ = 0.059;
sol := NDSolve[{x'[t] == μ * x[t] + y[t] - x[t]^2, y'[t] == -x[t] + μ * y[t] + 2 * x[t]^2,
   x[0] == 0.05, y[0] == 0.05}, {x, y}, {t, tMax}, Method → "StiffnessSwitching"]
xStar = (μ^2 + 1) / (μ + 2);
yStar = xStar^2 - μ * xStar;

distance[t_] = (((x[t] /. sol[[1]]) - xStar)^2 + ((y[t] /. sol[[1]]) - yStar)^2);

min = Minimize[
  {(((x[t] /. sol[[1]]) - xStar)^2 + ((y[t] /. sol[[1]]) - yStar)^2), 0 < t < tMax}, t]
tMin = t /. min[[2]]
distance[tMin]

Show[
 ParametricPlot[Evaluate[{x[t], y[t]} /. sol], {t, 0, 100}, PlotRange → {-0.6, 0.6}],
 Graphics[{PointSize[Large], Pink, Point[{xStar, yStar}]}],
 Graphics[
  {PointSize[Large], Red, Point[{x[tMin] /. sol[[1]], y[tMin] /. sol[[1]]}]}]
]
```

Out[927]= {0.00424391, {t → 379.585}}

Out[928]= 379.585

Out[929]= 0.00424391

Out[930]=



In[421]:= **NumberForm[0.00110473, 16]**

Out[421]//NumberForm=

0.0011047251580382 63

In[410]:= **NumberForm[0.000435907, 16]**

Out[410]//NumberForm=

0.0004359074464754355

In[422]:= **NumberForm[0.000435907, 16]**

Out[422]//NumberForm=

0.0004359074464754355

In[319]:= **distance[t /. min[[2]]]**

Out[319]= 0.0489753