In[2]:=
```
NDSolve[{ x''[t] ==  y[t] * (2 - x[t]^2 - y[t]^2),
          y''[t] == -x[t] * (2 - x[t]^2 - y[t]^2),
          x[0] == 0, y[0] == 1., x'[0] == 0, y'[0] == 0},
         {x, y}, {t, 0, 30}]
```

NDSolve::ndsz :
At t == 3.652401607212685`, step size is effectively zero; singularity or stiff system suspected. ≫

Out[2]=
```
{{x → InterpolatingFunction[{{0., 3.6524}}, <>],
  y → InterpolatingFunction[{{0., 3.6524}}, <>]}}
```

```
solve = NDSolve[{ x''[t] ==  y[t] * (2 - x[t]^2 - y[t]^2),
                  y''[t] == -x[t] * (2 - x[t]^2 - y[t]^2),
                  x[0] == 0, y[0] == 1., x'[0] == 0, y'[0] == 0},
                 {x, y}, {t, 0, 3.5}]
ParametricPlot[Evaluate[{x[t], y[t]} /. solve], {t, 0, 3.5}]
ParametricPlot[Evaluate[{t, x[t]   } /. solve], {t, 0, 3.5}]
ParametricPlot[Evaluate[{t, y[t]   } /. solve], {t, 0, 3.5}]
```

Out[28]=
```
{{x → InterpolatingFunction[{{0., 3.5}}, <>],
  y → InterpolatingFunction[{{0., 3.5}}, <>]}}
```

График y (x)

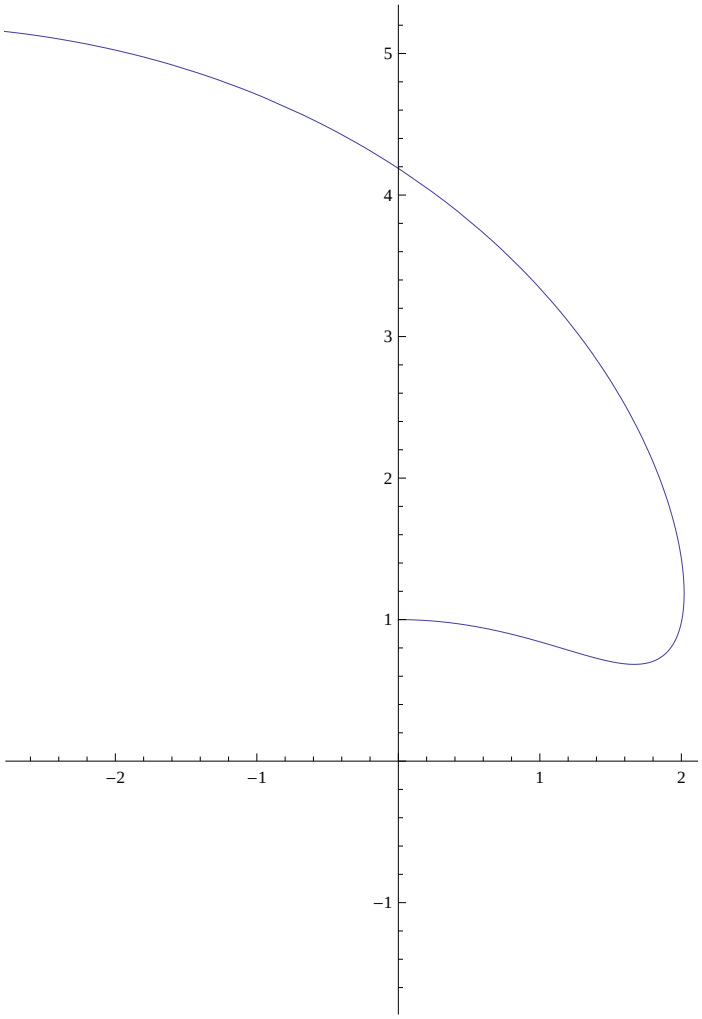

График x (t)

Out[30]=

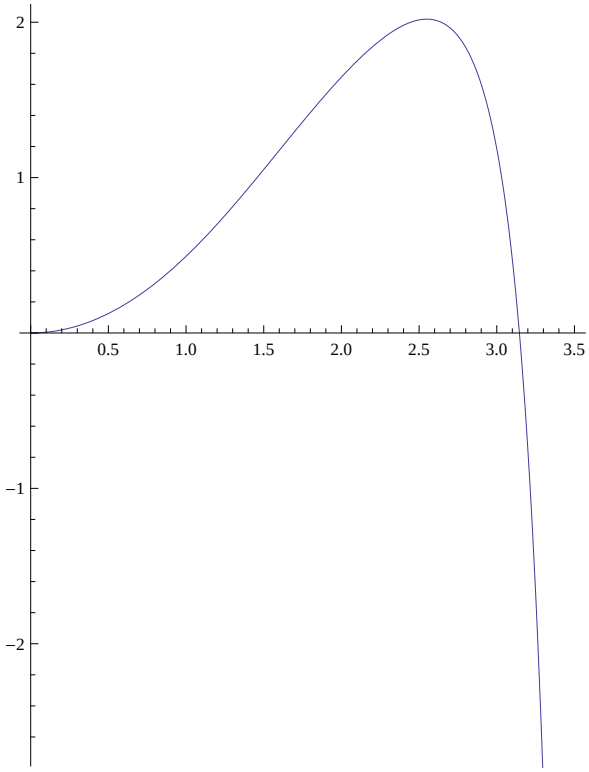

График y (t)

Out[31]=