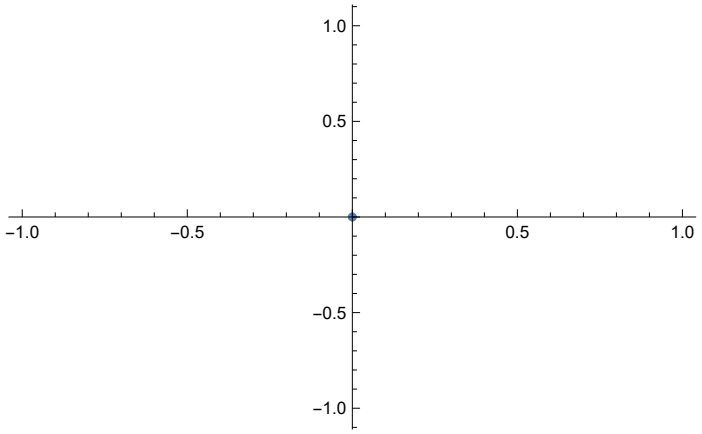
In[35]:=
```
Clear[minx, miny, maxx, maxy]
minx = -π;
miny = -π;
maxx = π;
maxy = π;
```

In[78]:=
```
Clear[sol, x, y, t, mu, tmin, tmax]
tmin = 0;
tmax = 10;
sigma = 0;
sol[x0_, y0_] := NDSolve[
  {x'[t] == y[t],
   y'[t] == -Sin[x[t]] - sigma y[t],
   x[0] == x0, y[0] == y0},
  {x, y}, {t, tmin, tmax}]
```

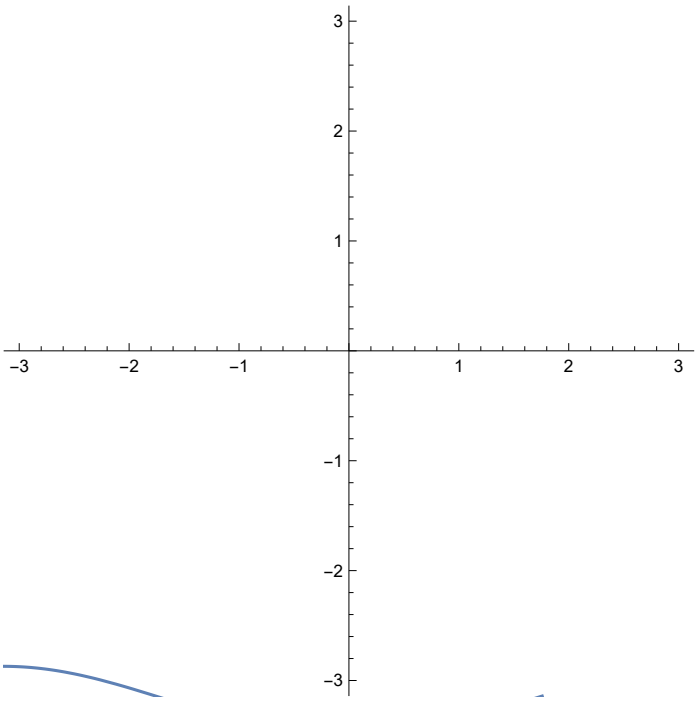
In[66]:=
```
dist = 0.1;
initialCond = Join[
   (*Table[{minx , y } , {y,miny , maxy,0.1}],
   Table[{maxx, y} , {y, miny , maxy,0.1}],
   Table[{x , miny},{x , minx , maxx,0.1}],
   Table[{x,maxy},{x,minx , maxx,0.1}]*)

   Table[{x , miny}, {x , minx , maxx, dist}],
   Table[{x, maxy}, {x, minx , maxx, dist}],
   Table[{minx , y } , {y, miny , maxy, dist}],
   Table[{maxx, y} , {y, miny , maxy, dist}]
  ];
```

Out[ ]=



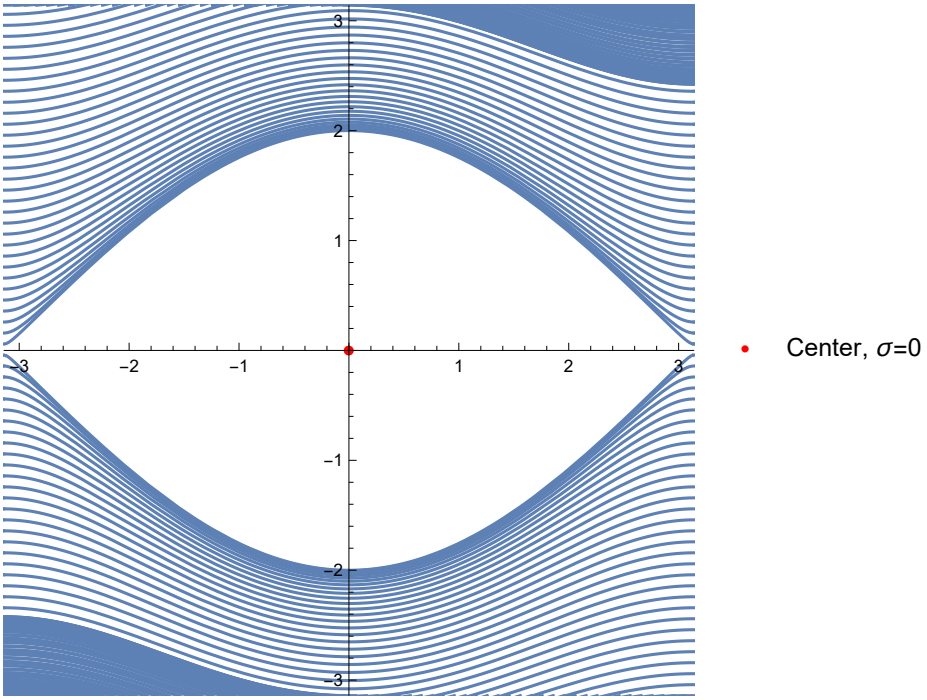
In[83]:=
```
ParametricPlot[
 Evaluate[{x[t], y[t]} /. sol[initialCond[[50, 1]], initialCond[[50, 2]]]],
 {t, tmin, tmax}, PlotRange → {{minx, maxx}, {miny, maxy}}]
```

Out[83]=



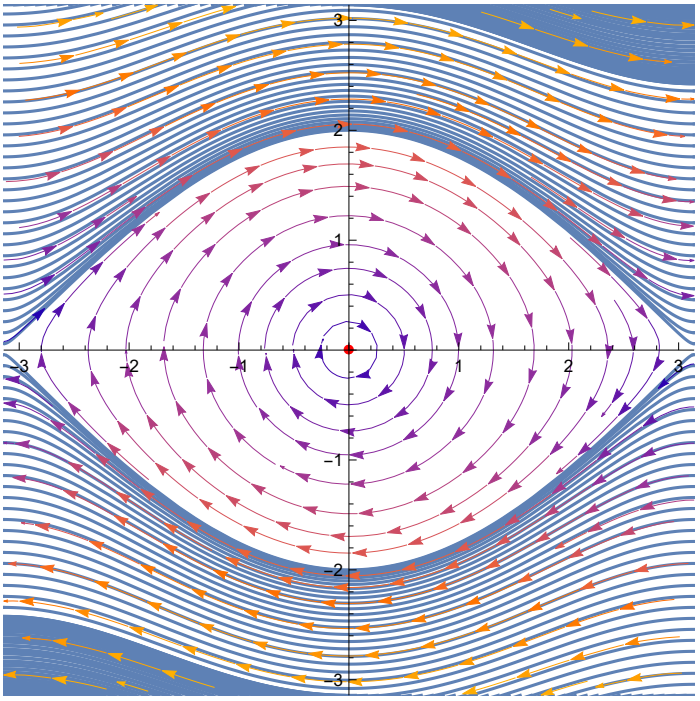
In[86]:=
```
p2 = Show[

  Table[
   ParametricPlot[
    Evaluate[{x[t], y[t]} /. sol[initialCond[[i, 1]], initialCond[[i, 2
        ]]]], {t, tmin, tmax}, PlotRange → {{minx, maxx}, {miny, maxy}}],
   {i, 1, Length[initialCond]}],
  ListPlot[{{0, 0}}, PlotStyle → {PointSize[0.1], Red},
   PlotMarkers → {"•", Large}, PlotLegends → {"Center, σ=0"}]
 ]
```

Out[86]=



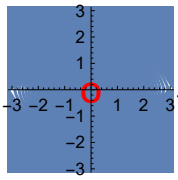
In[87]:=
```
Show[p2, StreamPlot[{y, -Sin[x] - sigma * y}, {x, -π, π}, {y, -π, π}],
 PlotRange → {{minx, maxx}, {miny, maxy}}]
```

Out[87]=



- Center, σ=0

In[ ]:=
```
Show[ , StreamPlot[{y, -Sin[x] - sigma * y}, {x, -π, π}, {y, -π, π}],
 PlotRange → {{-π, π}, {-π, π}}]
```



- Uns