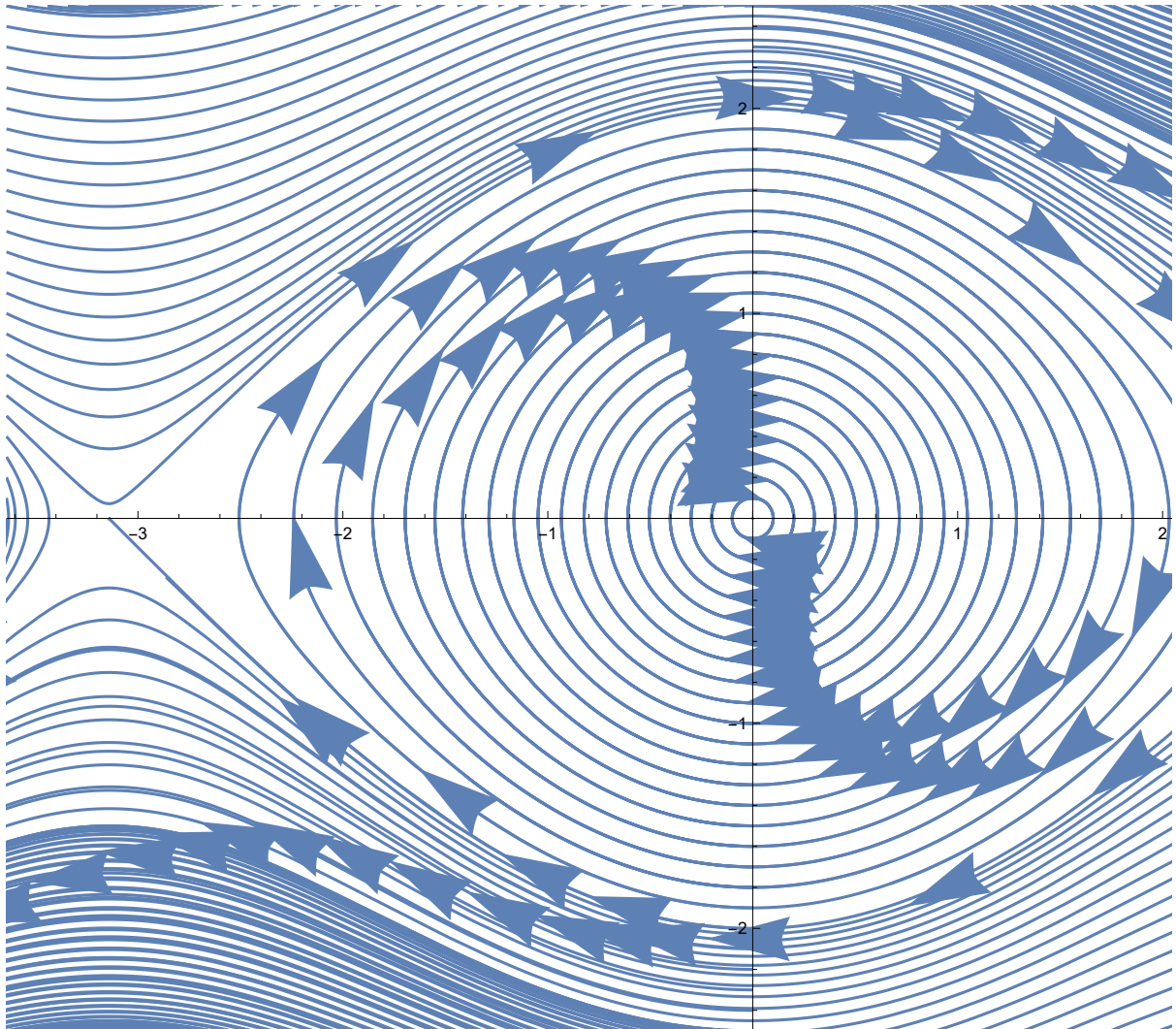


```

In[648]:= minx = - $\pi$  - 0.5; maxx =  $\pi$  + 0.5; miny = -2.5; maxy = 2.5;  $\sigma$  = 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, 0, 10}]
initialCondition = Join[Table[{0, y}, {y, miny, maxy, 0.1}],
  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}]];
Show[Table[ParametricPlot[Evaluate[{x[t], y[t]} /.
  sol[initialCondition[[i, 1]], initialCondition[[i, 2]]], {t, 0, 10},
  PlotRange -> {{minx, maxx}, {miny, maxy}}], {i, Length[initialCondition]}] /.
  Line[x_] -> {Arrowheads[{0., 0.05, 0.05, 0.}], Arrow[x]}]

```

Out[651]=

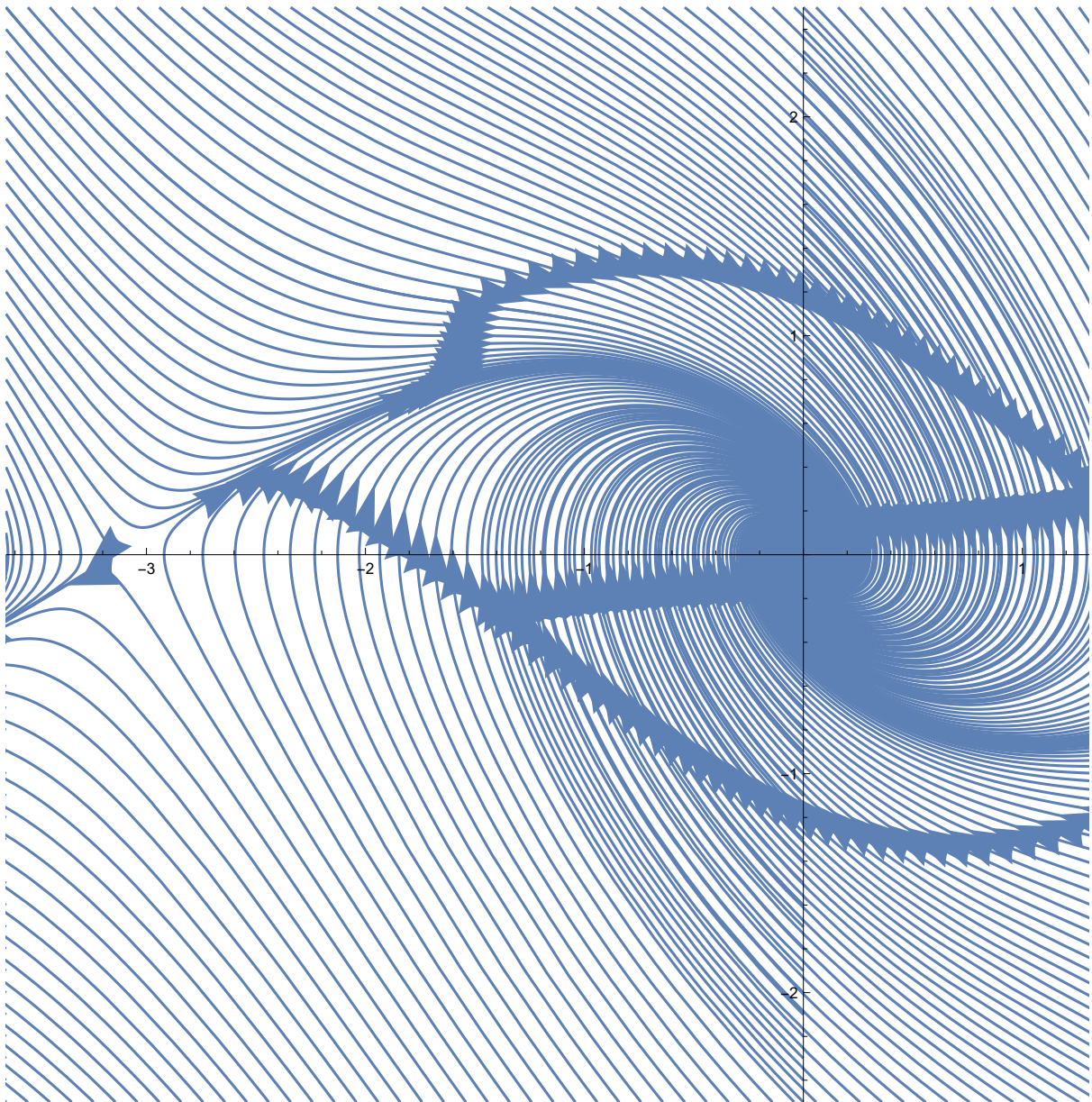


```

In[526]:=  $\sigma = 1$ ;
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, 0, 10}]
initialCondition = Join[Table[{0, y}, {y, miny, maxy, 0.1}],
  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}]];
Show[Table[ParametricPlot[Evaluate[{x[t], y[t]} /.
  sol[initialCondition[[i, 1]], initialCondition[[i, 2]]], {t, 0, 10},
  PlotRange -> {{minx, maxx}, {miny, maxy}}], {i, Length[initialCondition]}] /.
  Line[x_] -> {Arrowheads[{0., 0.03, 0.}], Arrow[x]}]

```

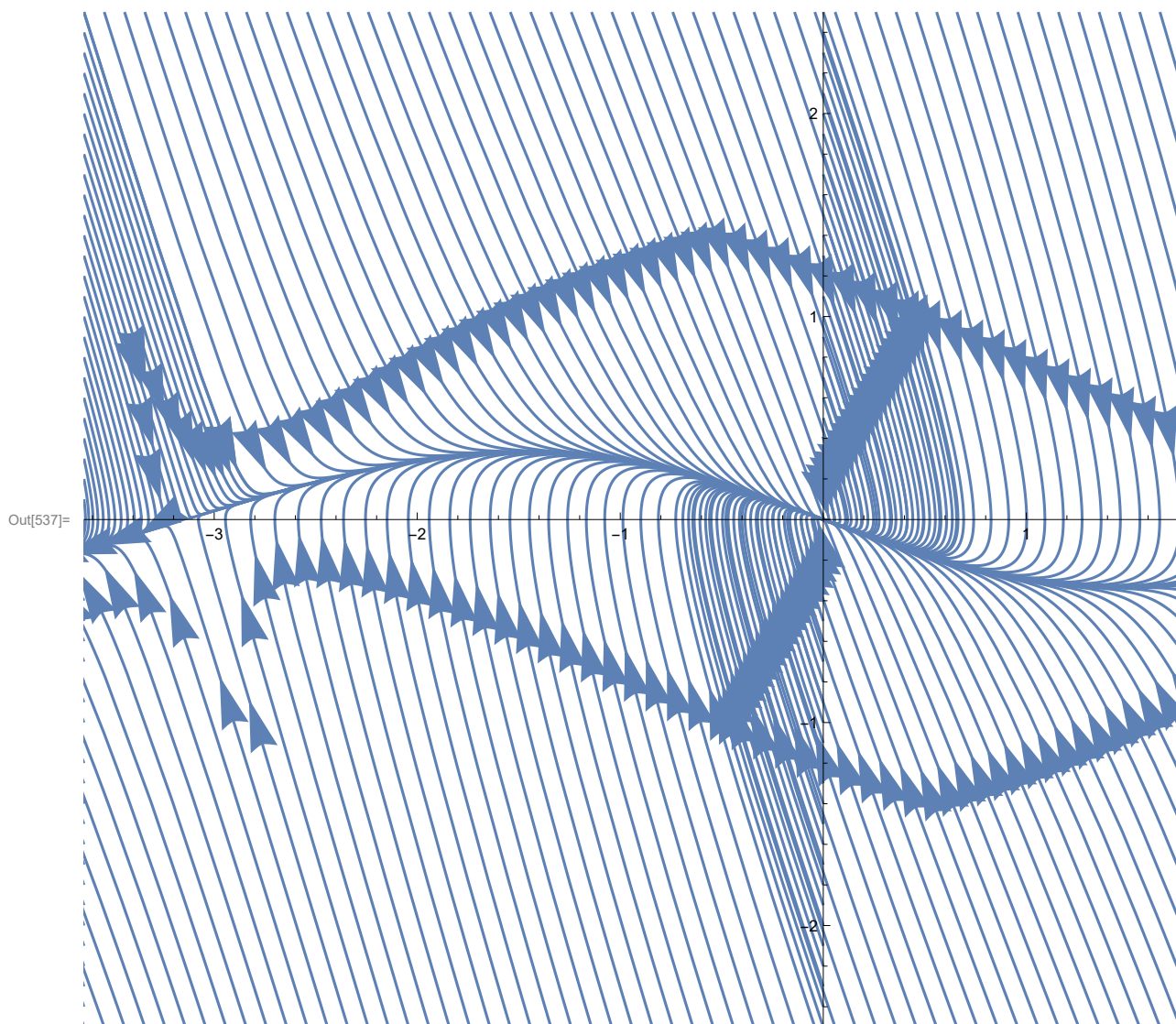
Out[529]=



```

In[534]:=  $\sigma = 3$ ;
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, 0, 10}]
initialCondition = Join[Table[{0, y}, {y, miny, maxy, 0.1}],
  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}]];
Show[Table[ParametricPlot[Evaluate[{x[t], y[t]} /.
  sol[initialCondition[[i, 1]], initialCondition[[i, 2]]], {t, 0, 10},
  PlotRange -> {{minx, maxx}, {miny, maxy}}], {i, Length[initialCondition]}] /.
  Line[x_] -> {Arrowheads[{0., 0.03, 0.}], Arrow[x]}]

```



```

In[546]:=  $\sigma = 10$ ;
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, 0, 10}]
initialCondition = Join[Table[{0, y}, {y, miny, maxy, 0.1}],
  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}]];
Show[Table[ParametricPlot[Evaluate[{x[t], y[t]} /.
  sol[initialCondition[[i, 1]], initialCondition[[i, 2]]], {t, 0, 10},
  PlotRange -> {{minx, maxx}, {miny, maxy}}], {i, Length[initialCondition]}] /.
  Line[x_] -> {Arrowheads[{0., 0.02, 0.}], Arrow[x]}]

```

