Phase Portraits

This is an example notebook for getting the phase portrait of a solution in the complex case.I used eigenvalues 0.1+/-2i for this picture;to change this,just edit the values you want to change and hit shift+enter in each cell above. Use the slider in the plot below to run the solution forward and backwards in time.

In[32]:=

```
lPlus = .1 + 2 * I;
lMinus = .1 - 2 * I;

a = {-2, -1};
b = {-1 / 2, 1};

vPlus = a + b * I;
vMinus = a - b * I;
x[t_] := (1 / 2) (vPlus * E^(lPlus t) + vMinus * E^(lMinus t))
```

In[38]:=

```
x[0]
x[Pi / 4]
```

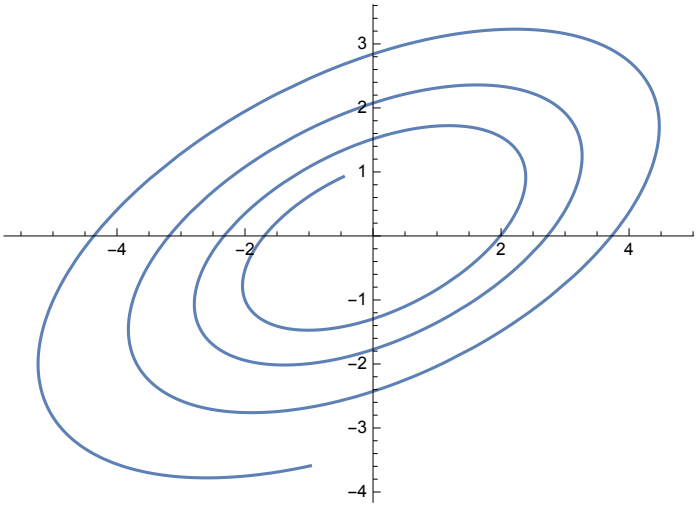
Out[38]= {-2. + 0. i, -1. + 0. i}

Out[39]= {0.540853 + 0. i, -1.08171 + 0. i}

In[40]:=

```
ParametricPlot[x[t], {t, -Pi / 4, 10}]
```

Out[40]=



In[41]:=
```
Manipulate[ParametricPlot[x[t], {t, -Pi, a},
  PlotRange → {{-5, 5}, {-5, 5}}], {a, -3.14, 10}]
```

Out[41]=