Example: Plot the solutions to a system of DEs, and look at the eigenvalues.

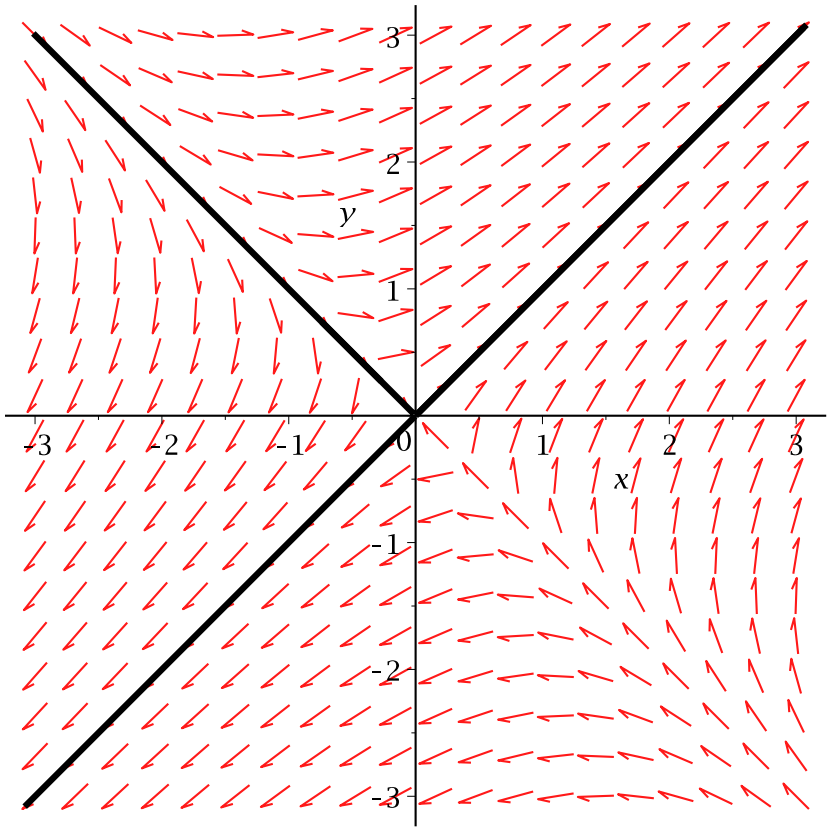
```
> with(DEtools): with(LinearAlgebra):
> ode1:=[diff(x(t),t)=x(t)+2*y(t), diff(y(t),t)=2*x(t)+y(t)];
```

$$ode1 := \left[\frac{d}{dt} x(t) = x(t) + 2\,y(t),\ \frac{d}{dt} y(t) = 2\,x(t) + y(t) \right] \quad (1)$$

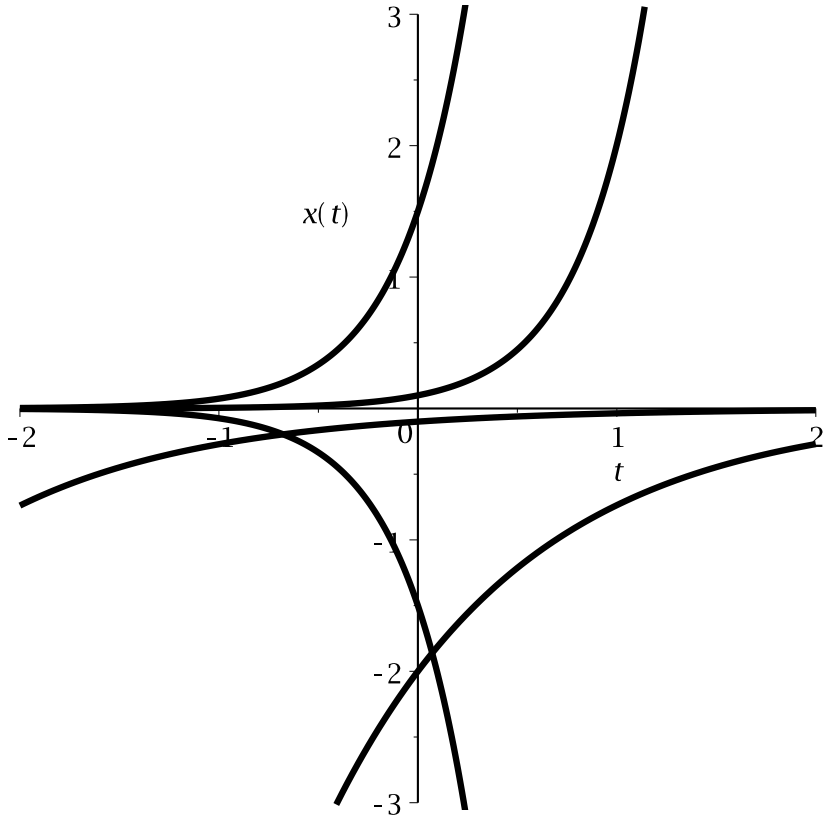
```
> ic:=[[x(0)=0.1,y(0)=0.1],[x(0)=-1.5,y(0)=-1.5],[x(0)=-0.1,y(0)=
  0.1],[x(0)=1.5,y(0)=1.5],[x(0)=-2,y(0)=2]];
```

$$ic := [[x(0) = 0.1,\ y(0) = 0.1],\ [x(0) = -1.5,\ y(0) = -1.5],\ [x(0) = -0.1,\ y(0) = 0.1],\ [x(0) = 1.5,\ y(0) = 1.5],\ [x(0) = -2,\ y(0) = 2]] \quad (2)$$

```
> DEplot(ode1,[x(t),y(t)],t=-2..2,ic,x=-3..3,y=-3..3,linecolor=
  black,stepsize=0.01);
```




```
> DEplot(ode1,[x(t),y(t)],t=-2..2,ic,x=-3..3,y=-3..3,linecolor=
  black,stepsize=0.01,scene=[t,x(t)]);
```




```
> A:=<<1,2>|<2,1>>;
```

$$A := \begin{bmatrix} 1 & 2 \\ 2 & 1 \end{bmatrix} \tag{3}$$

```
> Eigenvalues(A);
```

$$\begin{bmatrix} 3 \\ -1 \end{bmatrix} \tag{4}$$