

```
In [22]: # example adapted from
# https://matplotlib.org/stable/gallery/images_contours_and_fields/plot_streamplot.html
import numpy as np
import matplotlib.pyplot as plt
import matplotlib.gridspec as gridspec

from utils import *

%load_ext autoreload
%autoreload 2
```

The autoreload extension is already loaded. To reload it, use:
%reload_ext autoreload

```
In [26]: # define notebook parameters
w = 3
Y, X = np.mgrid[-w:w:100j, -w:w:100j]

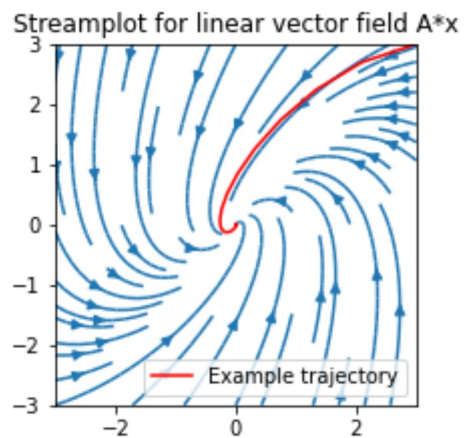
# example matrix
A = np.array([
    [-1, -2],
    [3, -4]
])
```

```
In [31]: # example for Euler's method to construct and plot a trajectory over the stream plot
y0 = np.array([3, 3])
time = np.linspace(0, 10, 100)
yt, time = solve_euler(lambda y: A@y, y0, time)

# example linear vector field A*x
ax0 = plot_phase_portrait(A, X, Y)

# then plot the trajectory over it
ax0.plot(yt[:, 0], yt[:, 1], c='red', label='Example trajectory')

# prettify
ax0.legend()
ax0.set_aspect(1)
```



In []: