

# Vectors

September 10, 2019

```
[37]: import numpy as np
import matplotlib.pyplot as plt
from mpl_toolkits.mplot3d import Axes3D
from matplotlib import cm
import matplotlib as mpl
from matplotlib import cbook, rcParams
from matplotlib.cbook import _OrderedSet, _check_1d, index_of
from matplotlib import docstring
import matplotlib.colors as mcolors
import matplotlib.lines as mlines
import matplotlib.patches as mpatches
import matplotlib.artist as martist
import matplotlib.transforms as mtransforms
import matplotlib.ticker as mticker
import matplotlib.axis as maxis
import matplotlib.spines as mspines
import matplotlib.font_manager as font_manager
import matplotlib.text as mtext
import matplotlib.image as mimage
from matplotlib.rcsetup import cyclcr, validate_axisbelow
```

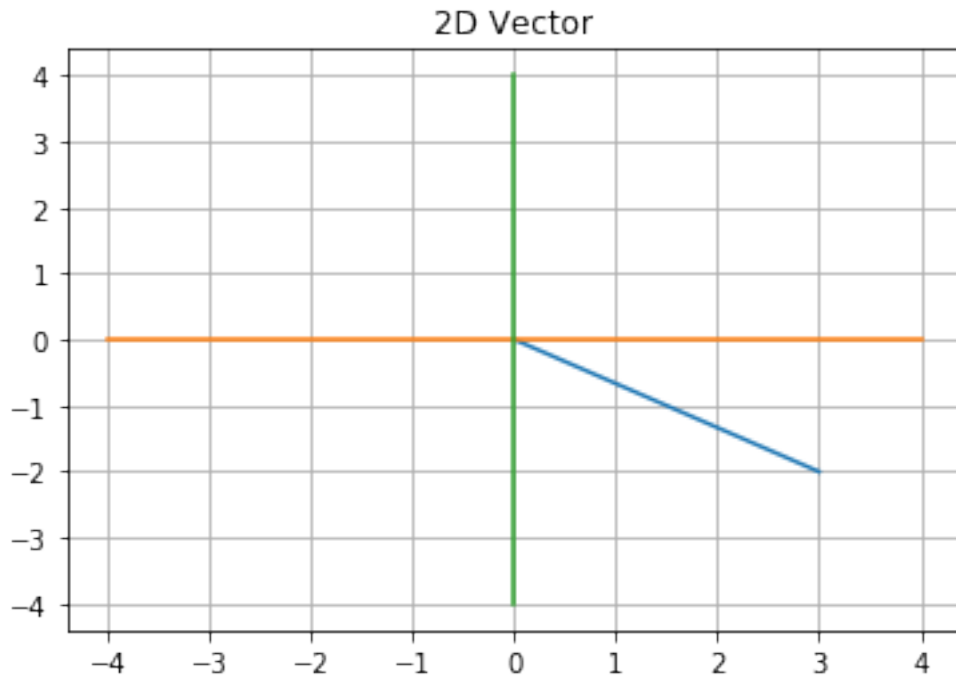
```
[2]: #2 D Vector

v1 = [3,-2]

print('Vector v1 is', v1)
```

Vector v1 is [3, -2]

```
[21]: #plot
plt.plot([0,v1[0]],[0,v1[1]])
plt.title('2D Vector')
plt.axis
plt.grid()
plt.plot([-4,4],[0,0])
plt.plot([0,0],[-4,4])
plt.show()
```



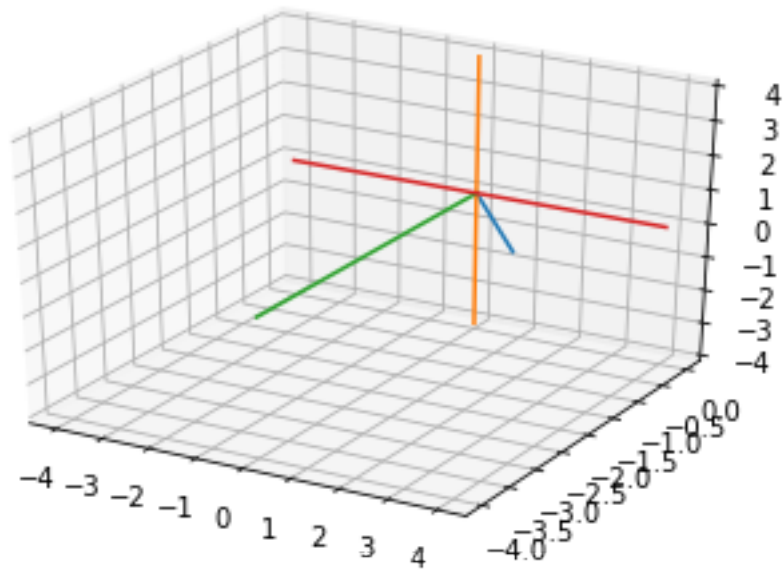
[12]:

[12]: <function matplotlib.pyplot.axis(\*args, \*\*kwargs)>

[60]: *#3D Vector*

```
v2 = [4,-3,2]
```

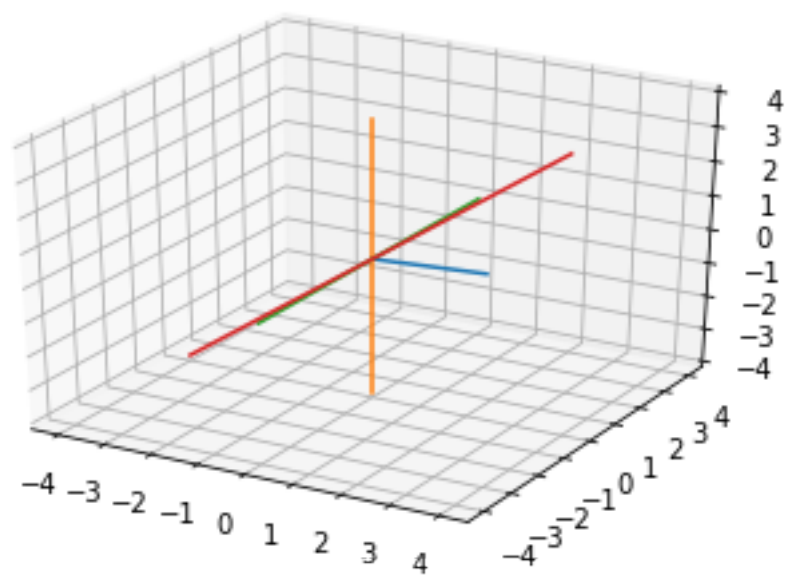
```
[61]: fig = plt.figure()
ax = fig.gca(projection='3d')
ax.plot([0,v2[0]],[0,v2[1]],[0,v2[2]])
ax.plot([0,0],[0,0],[-4,4])
ax.plot([0,0],[-4,0],[0,0])
ax.plot([-4,4],[0,0],[0,0])
plt.grid()
plt.show()
```



```
[62]: v3 = np.transpose(v2)
      print(v3)
```

```
[ 4 -3  2]
```

```
[54]: fig = plt.figure()
      ax = fig.gca(projection='3d')
      ax.plot([0,v3[0]],[0,v3[1]],[0,v3[2]])
      plt.axis()
      ax.plot([0,0],[0,0],[-4,4])
      ax.plot([0,0],[-4,4],[0,0])
      ax.plot([-4,4],[0,0],[-4,4])
      plt.grid()
      plt.show()
```



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