**import** matplotlib.pyplot **as** plt

**import** numpy **as** np

**import** string

*# points a, b and, c*

a, b, c, d **=** (0, 1, 0), (1, 0, 1), (0, **-**1, 2), (**-**1, 0, 3)

*# matrix with row vectors of points*

A **=** np.array([a, b, c, d])

*# 3x3 Identity transformation matrix*

I **=** np.eye(3) *#float*

color\_lut **=** 'rgbc' *#4 colors to represent 4 points*

fig **=** plt.figure()

ax **=** plt.gca()

xs **=** []

ys **=** []

**for** row **in** A:

output\_row **=** I **@** row

x, y, i **=** output\_row

xs.append(x)

ys.append(y)

i **=** int(i) *# convert float to int for indexing*

c **=** color\_lut[i]

plt.scatter(x, y, color**=**c)

plt.text(x **+** 0.15, y, f"{string.ascii\_letters[i]}")

xs.append(xs[0])

ys.append(ys[0])

plt.plot(xs, ys, color**=**"gray", linestyle**=**'dotted')

ax.set\_xticks(np.arange(**-**2.5, 3, 0.5))

ax.set\_yticks(np.arange(**-**2.5, 3, 0.5))

plt.grid()

plt.show()