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In [4]: import numpy as np
import matplotlib.pyplot as plt
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In [5]: a = np.random.normal(loc=2, scale=7, size=1000)
b = 3*a + 999
```

```
cov = np.cov(a, b)
print(cov)
```

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# ==
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```
a = np.random.normal(loc=2, scale=7, size=1000)
b = np.ones(1000) * 4
cov = np.cov(a, b)
print(cov)
```

```
[[ 48.68149645 146.04448936]
 [146.04448936 438.13346807]]
[[50.84071735  0.         ]
 [ 0.         0.         ]]
```

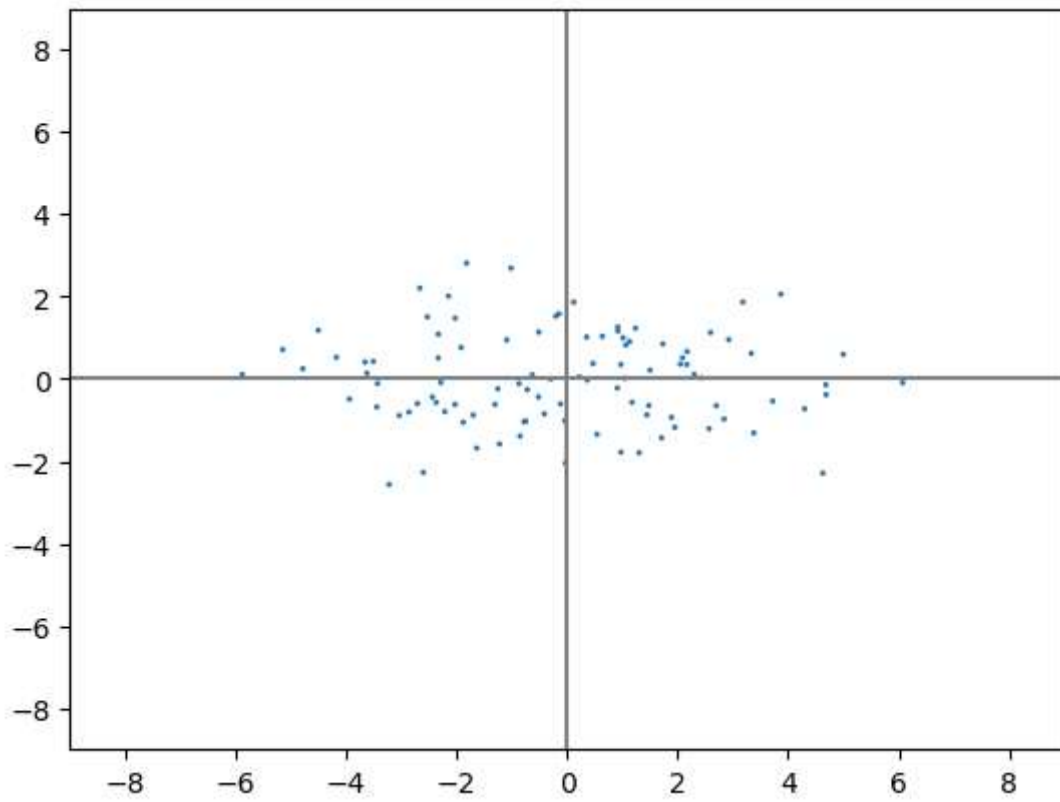
```
In [6]: mean = np.zeros(2)
cov1 = np.array([[9, 0], [0, 1]])
cov2 = np.array([[1, -0.75], [-0.75, 1]])

s1 = np.random.multivariate_normal(mean, cov1, size=100)
s2 = np.random.multivariate_normal(mean, cov2, size=100)

plt.scatter(s1[:,0], s1[:,1], [1 for i in range(len(s1))])
plt.xlim(-9, 9)
plt.ylim(-9, 9)
plt.axhline(0, color="gray")
plt.axvline(0, color="gray")
plt.title("8a")
plt.show()

plt.scatter(s2[:,0], s2[:,1], [1 for i in range(len(s2))])
plt.xlim(-9, 9)
plt.ylim(-9, 9)
plt.axhline(0, color="gray")
plt.axvline(0, color="gray")
plt.title("8b")
plt.show()
```

8a



8b

