pset0
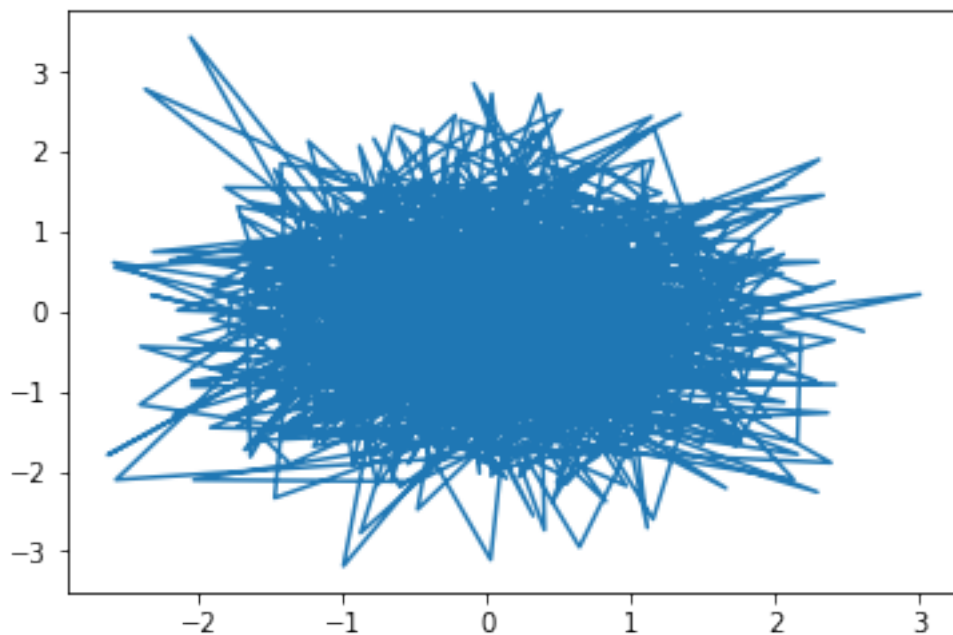
January 19, 2017

```
In [1]: %matplotlib inline
        import numpy as np
        import matplotlib.pyplot as plt

In [3]: mean_0 = (0, 0)
        cov_identity = [[1,0],[0,1]]
        x1, x2 = np.random.multivariate_normal(mean_0, cov_identity, 1000).T
        plt.plot(x1, x2)

Out[3]: [<matplotlib.lines.Line2D at 0x1107d9c10>]
```
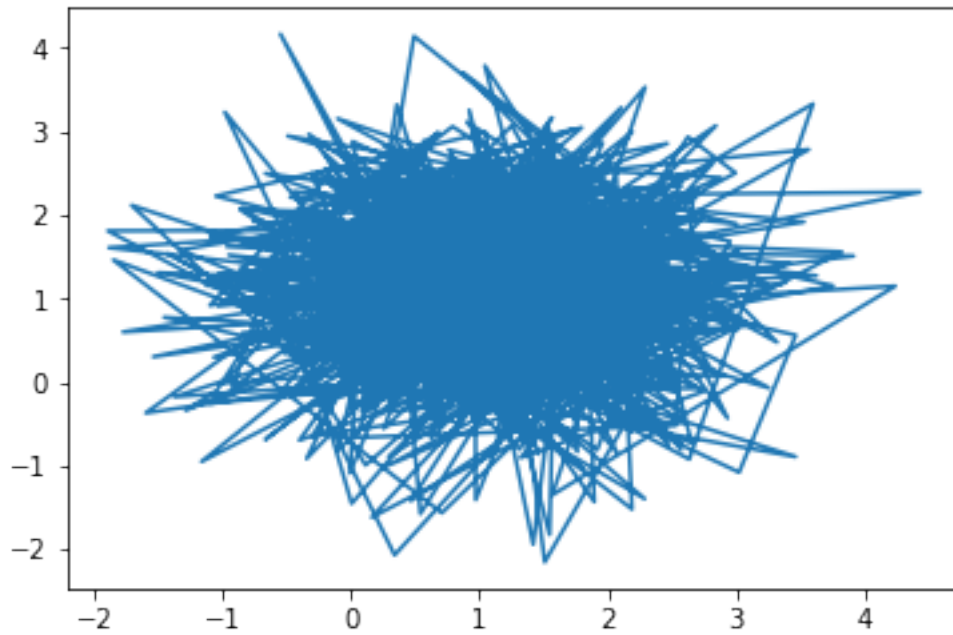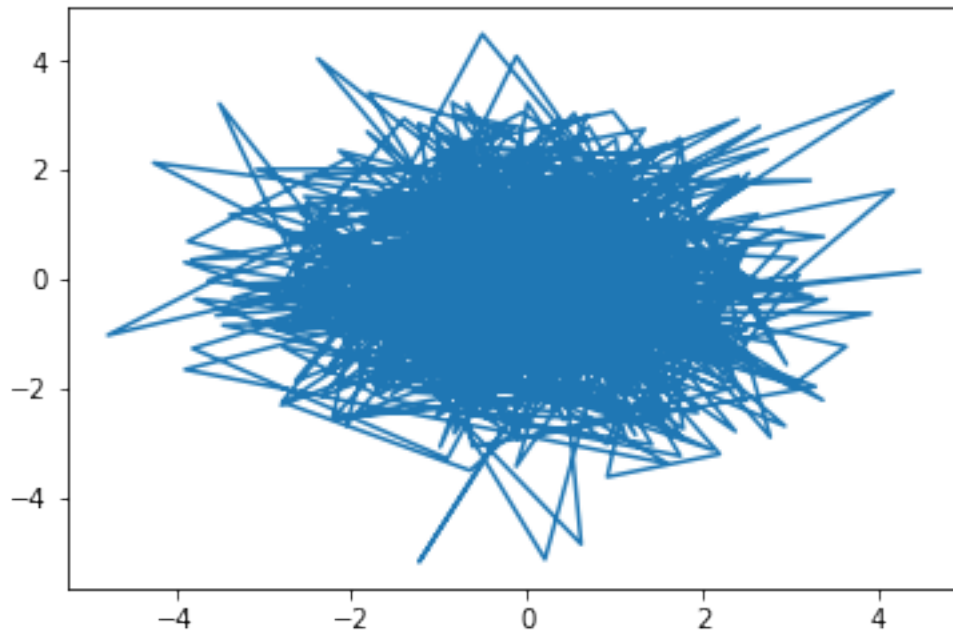


```
In [4]: mean_1 = (1, 1)

In [5]: x1, x2 = np.random.multivariate_normal(mean_1, cov_identity, 1000).T
        plt.plot(x1, x2)
```
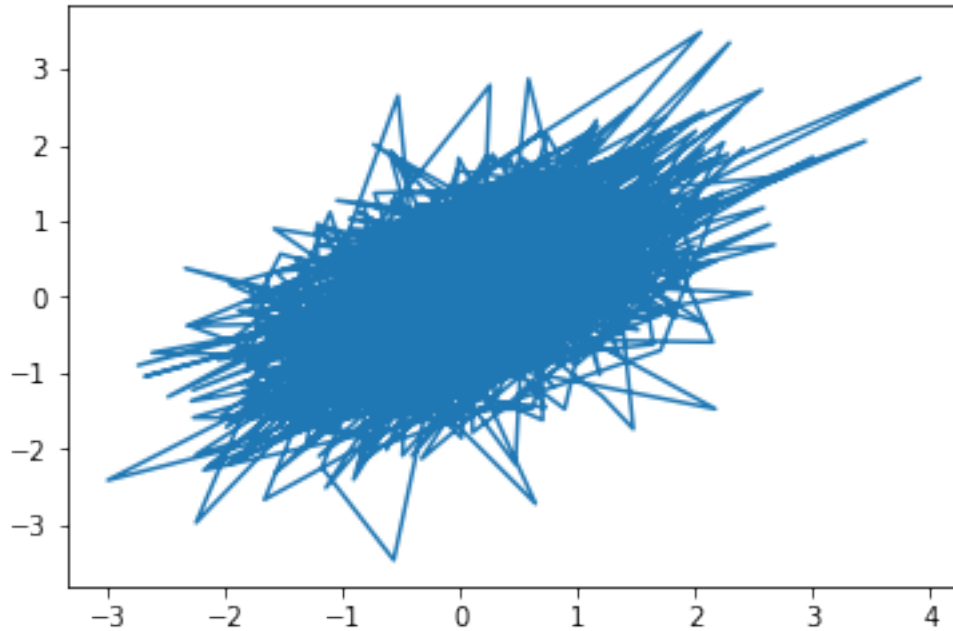
```
In [6]: cov_doubled = [[2,0],[0,2]]
        x1, x2 = np.random.multivariate_normal(mean_0, cov_doubled, 1000).T
        plt.plot(x1, x2)
```
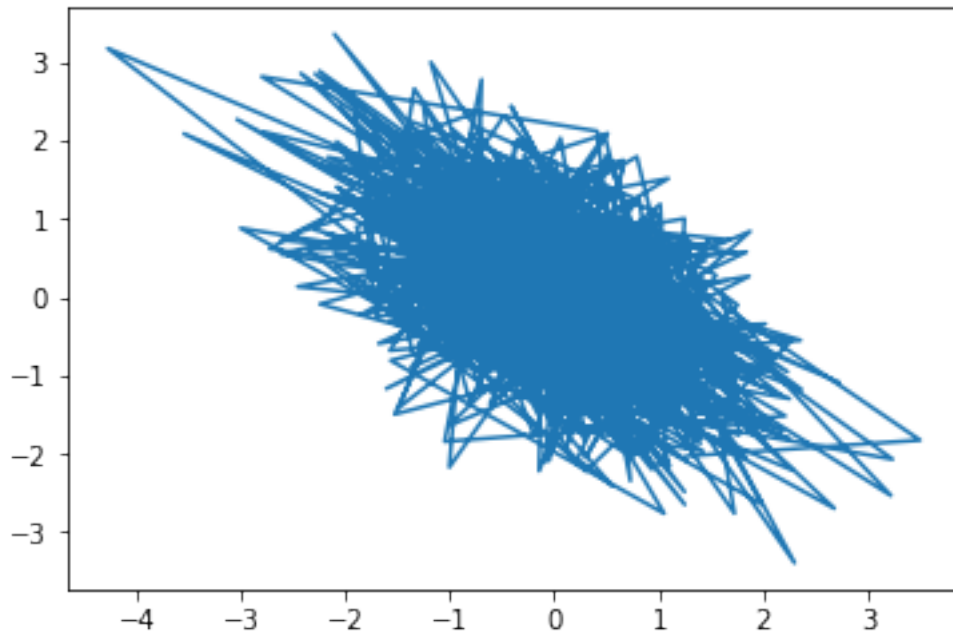
```
In [7]: cov_d = [[1, 0.5],[0.5, 1]]
        x1, x2 = np.random.multivariate_normal(mean_0, cov_d, 1000).T
        plt.plot(x1, x2)
```

Out[7]: [<matplotlib.lines.Line2D at 0x1110afd50>]


```
In [8]: cov_e = [[1, -0.5], [-0.5, 1]]
        x1, x2 = np.random.multivariate_normal(mean_0, cov_e, 1000).T
        plt.plot(x1, x2)
```

Out[8]: [<matplotlib.lines.Line2D at 0x11114c450>]

```
In [9]: prob_11 = [[1, 0], [1, 3]]
        eig_vals, eig_vects = np.linalg.eig(prob_11)
        eig_vals; eig_vects

Out[9]: array([[ 0.        ,  0.89442719],
               [ 1.        , -0.4472136 ]])

In [10]: eig_vals

Out[10]: array([ 3.,  1.])

In [11]: eig_vects

Out[11]: array([[ 0.        ,  0.89442719],
               [ 1.        , -0.4472136 ]])

In [ ]:
```