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import pandas as pd
import numpy as np

num = np.random.uniform(0,1,10000)
```

```
a = np.array([])
for i in range(20):
    select10 = np.random.choice(num,10)
    a = np.append(a,select10.mean())
print(a.mean(),a.std())
```

0.48112868409 0.0689203843189

```
b = np.array([])
for i in range(50):
    select1000 = np.random.choice(num,1000)
    b = np.append(b,select1000.mean())
print(b.mean(),b.std())
```

0.499421760376 0.00854388743623

```

from sklearn import linear_model
from sklearn.preprocessing import PolynomialFeatures
x = np.random.uniform(-1,1,2000)
x = np.reshape(x, (-1, 2))
y = []
for i in range(1000):
    tmpx = []
    tmp = 2*x[i][0]**2-0.6*x[i][1]**2+1.5*x[i][0]*x[i][1]+x[i][0]+2*x[i][1]+np.random.rand()
    y.append(tmp)
y = np.array(y)

regr = linear_model.LinearRegression()
poly = PolynomialFeatures(2)
X_transform = poly.fit_transform(x)
regr.fit(X_transform,y)
regr.coef_

```

```

array([ 0.          ,  1.0241976 ,  2.00071575,  2.07680962,  1.45454119,
        -0.5779588 ])

```

```

from sklearn.metrics import mean_absolute_error
y_pred = regr.predict(X_transform)
mean_absolute_error(y, y_pred)

```

```

0.24510714659490254

```

