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22PC26

1
```python
import numpy as np
import matplotlib.pyplot as plt
from scipy.stats import linregress
xval= np.array([2,3,5,7,9])
yval = np.array([4,5,7,10,15])

m,b, r, p, err = linregress(xval, yval)

plt.scatter(xval, yval)
plt.show()

print("Linear Regression Equation: y = {:.2f}x + {:.2f}".format(m, b))
print("Correlation Coefficient (r): {:.2f}".format(r))

y_pred = m*x + b
lse = np.sum((yval-y_pred) ** 2)

print("Least Squares of Errors (SSE) : {:.2f}".format(lse))
```

2
```python
import numpy as np
import matplotlib.pyplot as plt

x_transpose=np.matrix('[1,1,1,1,1,1,1,1,1,1,1,1;14.2,16.4,11.9,15.2,18.5,22.1,19.4,25.1,23.4,18.1,22.6,17.2]')
x=x_transpose.transpose()
y_transpose=np.matrix('[215,325,185,332,406,522,412,614,544,421,445,408]')
y=y_transpose.transpose()
co2=x_transpose*y
co1_i=x_transpose*x
co1=np.linalg.inv(co1_i)
b=co1*co2
print(b)

x_val=np.matrix('[14.2,16.4,11.9,15.2,18.5,22.1,19.4,25.1,23.4,18.1,22.6,17.2]')
```

```
y=b[0][0]+x_val.transpose()*b[1][0]
yarr=np.array(y)
xarr=np.array(x_val)
x_axis=np.linspace(10,30,5)

plt.plot(x_axis,y,'-r',label='')
plt.title('Graph')
plt.xlabel('temp')
plt.ylabel('Ice cream')
plt.scatter(np.array(x_val),np.array(yarr))

plt.grid()
plt.show()
```