

```
# Title : Linear Regression
```

```
import numpy as np
```

```
from sklearn.linear_model import LinearRegression
```

```
x=np.array([[1],[2],[3],[4],[5]])
```

```
y=np.array([[3],[4],[2],[4],[5]])
```

```
reg=LinearRegression().fit(x,y)
```

```
print(reg.score(x,y))
```

```
➡ 0.3076923076923075
```

```
print(reg.coef_)
```

```
print(reg.intercept_)
```

```
➡ [[0.4]
    [2.4]]
```

```
print(reg.predict([[9]]))
```

```
➡ [[6.]]
```

```
import numpy as np
```

```
x=np.array([[1],[2],[3],[4],[5]])
```

```
y=np.array([[3],[4],[2],[4],[5]])
```

```
xmean=np.mean(x)
```

```
xmean
```

```
➡ 3.0
```

```
ymean=np.mean(y)
```

```
ymean
```

```
➡ 3.6
```

```
xmval=x-xmean
```

```
ymval=y-ymean
```

```
xmval
```

```
➡ array([[ -2.],
         [ -1.],
         [  0.],
         [  1.],
         [  2.]])
```

```
ymval
```

```
➡ array([[ -0.6],
         [  0.4],
         [ -1.6],
         [  0.4],
         [  1.4]])
```


```
sqxmval=(xmval**2)
```

```
xs=sum(sqxmval)
```


```
xs
```

 `array([10.])`


```
mul=xmval*ymval
m=sum(mul)/xs
m
```

 `array([0.4])`

```
c=ymean-(m*xmean)
c
```

 `array([2.4])`

```
xnew=9
ynew=(m*xnew)+c
ynew
```

 `array([6.])`


`# New Datasets`

```
import numpy as np
from sklearn.linear_model import LinearRegression
```


```
x=np.array([[95],[85],[80],[70],[60],[90]])
y=np.array([[85],[95],[70],[65],[70],[80]])
```

```
reg=LinearRegression().fit(x,y)
```


```
print(reg.score(x,y))
```

 `0.46136101499423277`

```
print(reg.coef_)
print(reg.intercept_)
```

 `[[0.58823529]
 [30.44117647]]`

```
print(reg.predict([[90]]))
```

 `[[83.38235294]]`

```
import numpy as np
```

```
x=np.array([[95],[85],[80],[70],[60],[90]])
y=np.array([[85],[95],[70],[65],[70],[80]])
```


```
xmean=np.mean(x)
xmean
```

 `80.0`

```
ymean=np.mean(y)
ymean
```

 `77.5`

```
xmval=x-xmean
xmval
```

 `array([[15.],
 [5.],
 [0.],
 [-10.],
 [-20.],
 [10.]])`

```
ymval=y-ymean
ymval
```

```
↔ array([[ 7.5],
          [ 17.5],
          [-7.5],
          [-12.5],
          [-7.5],
          [ 2.5]])
```

```
sqxmval=(xmval**2)
sqxmval
```

```
↔ array([[225.],
          [ 25.],
          [  0.],
          [100.],
          [400.],
          [100.]])
```

```
xs=sum(sqxmval)
xs
```

```
↔ array([850.])
```

```
sqymval=(ymval**2)
sqymval
```

```
↔ array([[ 56.25],
          [306.25],
          [ 56.25],
          [156.25],
          [ 56.25],
          [  6.25]])
```

```
ys=sum(sqymval)
ys
```

```
↔ array([637.5])
```

```
mul=xmval*ymval
mul
```

```
↔ array([[112.5],
          [ 87.5],
          [-0. ],
          [125. ],
          [150. ],
          [ 25. ]])
```

```
m=sum(mul)
m
```

```
↔ array([500.])
```

```
m=sum(mul)/xs
m
```

```
↔ array([0.58823529])
```

```
c=ymean-(m*xmean)
c
```

```
↔ array([30.44117647])
```

```
xnew=90
ynew=(m*xnew)+c
ynew
```

```
↔ array([83.38235294])
```

