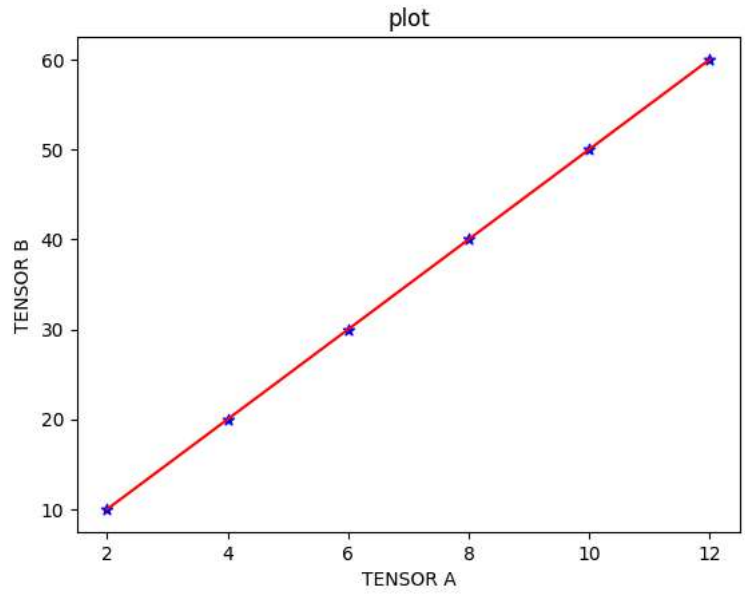
```
import  tensorflow as tf
from sklearn.datasets import load_iris
samples=load_iris()
x=samples.data
y=samples.target
x=tf.convert_to_tensor(x,dtype=tf.int32)
y=tf.convert_to_tensor(y,dtype=tf.int32)
print('shape of x=',x.shape)
print('shape of y=',y.shape)
```

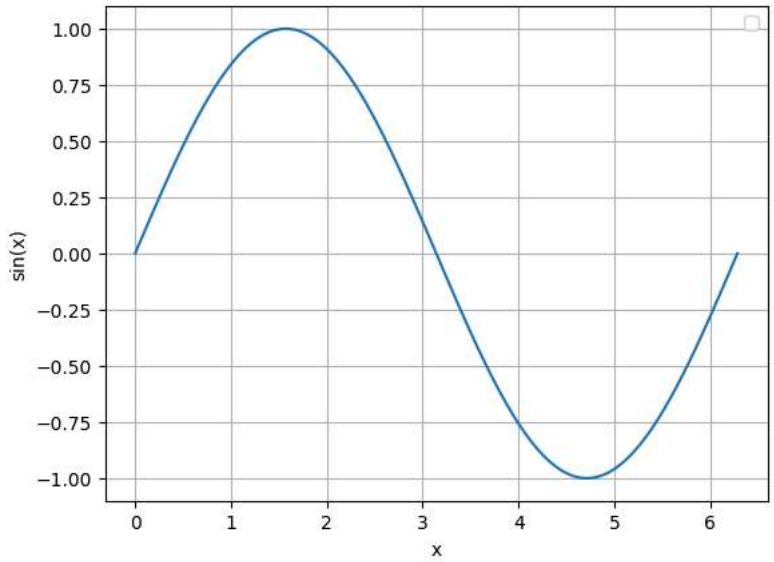
```
shape of x= (150, 4)
shape of y= (150,)
```

```
import tensorflow as tf
import matplotlib.pyplot as plt
A=tf.constant([2,4,6,8,10,12])
B=tf.constant([10,20,30,40,50,60])
plt.scatter(A,B,marker='*',color='blue')
plt.plot(A,B,color='red')
plt.title('plot')
plt.xlabel('TENSOR A')
plt.ylabel('TENSOR B')
plt.show()
```




```
import tensorflow as tf
import numpy as np
import matplotlib.pyplot as plt
from numpy import linspace
x=linspace(0.0,2*np.pi,100)
y=tf.sin(x)
x_np,y_np=x,y.numpy()
plt.plot(x_np,y_np)
plt.xlabel('x')
plt.ylabel('sin(x)')
plt.grid(True)
plt.legend()
plt.show()
```

```
<ipython-input-2-b3dadc8b3c87>:12: UserWarning: No artists with labels found to put in legend.  Note that artists whose label start with
  plt.legend()
```




```
import tensorflow as tf
x=tf.Variable(2.0)
y=tf.Variable(3.0)
with tf.GradientTape(persistent=True) as tape:
  tape.watch(x)
  tape.watch(y)
  z=x**2+y**2+3*x*y-5*x+4*y+7
df_dx=tape.gradient(z,x)
df_dy=tape.gradient(z,y)
print(df_dx.numpy())
print(df_dy.numpy())
```

```
8.0
16.0
```

```
import keras as k
print(k.__version__)
```

```
3.5.0
```

```
import keras.datasets as k
print(dir(k))
```

```
['__builtins__', '__cached__', '__doc__', '__file__', '__loader__', '__name__', '__package__', '__path__', '__spec__', 'boston_housing',
```

```
import keras.datasets as k
for i in dir(k):
  print(i)
```

```
__builtins__
__cached__
__doc__
__file__
__loader__
__name__
__package__
__path__
__spec__
boston_housing
california_housing
cifar10
cifar100
fashion_mnist
imdb
mnist
reuters
```

```
from keras.datasets import mnist
(x_train,y_train),(x_test,y_test)=mnist.load_data()
print(x_train.shape)
print(y_train.shape)
print(x_test.shape)
print(y_test.shape)
```

```
Downloading data from https://storage.googleapis.com/tensorflow/tf-keras-datasets/mnist.npz
11490434/11490434 ━━━━━━━━━━━━━━━━━━━━ 0s 0us/step
(60000, 28, 28)
(60000,)
(10000, 28, 28)
(10000,)
```

```
from keras.datasets import mnist
import matplotlib.pyplot as plt
(x_train,y_train),(x_test,y_test)=mnist.load_data()
print(x_train.shape)
print(x_test.shape)
plt.imshow(x_train[1],cmap='Greens')
print(y_train[1])
plt.show()
```

```
(60000, 28, 28)
(10000, 28, 28)
0
```