Trigonometric Functions in Numpy

```
import numpy as np
```

```
np.pi
```

```
    3.141592653589793
```

```
np.sin(np.pi/2)
```

```
    1.0
```

```
np.sin(np.pi/6)
```

```
    0.49999999999999994
```

```
np.cos(np.pi)
```

```
    -1.0
```

```
np.cos(np.pi/3)
```

```
    0.5000000000000001
```

```
np.tan(np.pi/3)
```

```
    1.7320508075688767
```

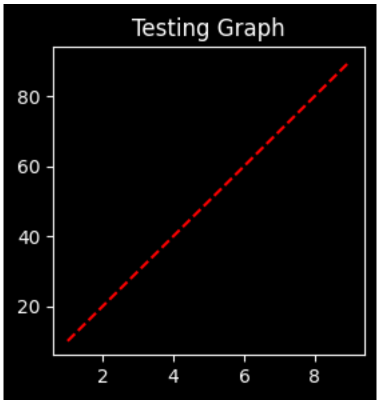
```
np.tan(0)
```

```
    0.0
```

Using Matplotlib With Numpy

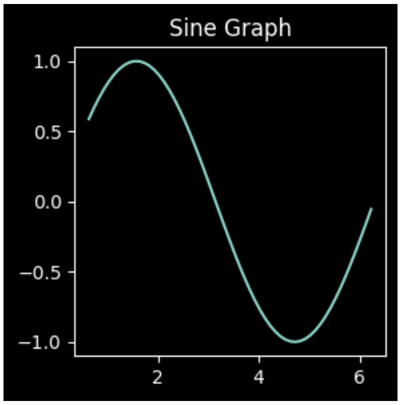
```
import matplotlib.pyplot as plt
plt.style.use('dark_background')
```

```
x = np.arange(1,10)
y = np.arange(10,100,10)

plt.figure(figsize = (3,3))
plt.plot(x,y,'r--')
plt.title('Testing Graph')
plt.show()
```

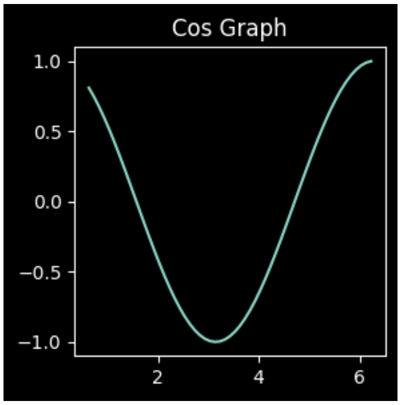


Plotting Trigonometric Curves

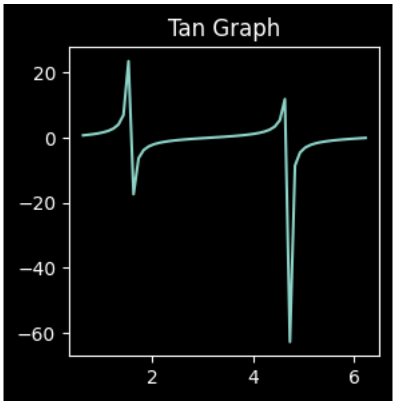
```
x_sin = np.arange(0.2*np.pi,2*np.pi,0.1)
y_sin = np.sin(x_sin)

plt.figure(figsize = (3,3))
plt.plot(x_sin,y_sin)
plt.title('Sine Graph')
plt.show()
```



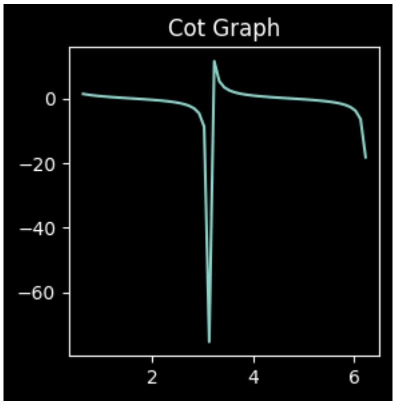
```
x_cos = np.arange(0.2*np.pi,2*np.pi,0.1)
y_cos = np.cos(x_cos)

plt.figure(figsize = (3,3))
plt.plot(x_cos,y_cos)
plt.title('Cos Graph')
plt.show()
```



```
x_tan = np.arange(0.2*np.pi,2*np.pi,0.1)
y_tan = np.tan(x_tan)

plt.figure(figsize = (3,3))
plt.plot(x_tan,y_tan)
plt.title('Tan Graph')
plt.show()
```

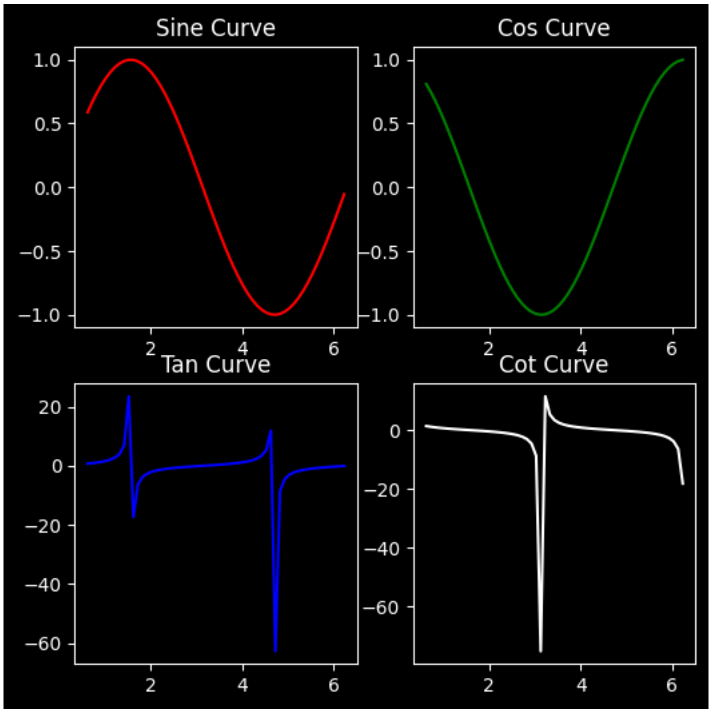


```
x_cot = np.arange(0.2*np.pi,2*np.pi,0.1)
y_cot = 1/np.tan(x_cot)

plt.figure(figsize = (3,3))
plt.plot(x_cot,y_cot)
plt.title('Cot Graph')
plt.show()
```



Subplotting Trigonometric Curves

```
plt.figure(figsize=(6,6))

plt.subplot(2,2,1)
plt.plot(x_sin,y_sin,'r-')
plt.title("Sine Curve")

plt.subplot(2,2,2)
plt.plot(x_cos,y_cos,'g-')
plt.title("Cos Curve")

plt.subplot(2,2,3)
plt.plot(x_tan,y_tan,'b-')
plt.title("Tan Curve")

plt.subplot(2,2,4)
plt.plot(x_cot,y_cot,'w-')
plt.title("Cot Curve")
plt.show()
```


Sine Curve
Cos Curve
Tan Curve
Cot Curve
1.0
0.5
0.0
−0.5
−1.0
20
0
−20
−40
−60
2
4
6