Exercise : Normal distribution

To be defined as 'normal' distribution should be symmetrical about the mean, it should meet the x-axis at infinity and it should be bell-shaped.

Implementation of Normal Distribution

```python
# Importing required libraries
import numpy as np
import matplotlib.pyplot as plt

# Creating a series of data of in range of 1-50.
x = np.linspace(1, 50, 200)


# Creating a Function.
def normal_dist(x, mean, sd):
    prob_density = (np.pi * sd) * np.exp(-0.5 * ((x - mean) / sd) ** 2)
    return prob_density


# Calculate mean and Standard deviation.
mean = np.mean(x)
sd = np.std(x)

# Apply function to the data.
pdf = normal_dist(x, mean, sd)

# Plotting the Results
plt.plot(x, pdf, color='red')
plt.xlabel('Data points')
plt.ylabel('Probability Density')
plt.show()
```
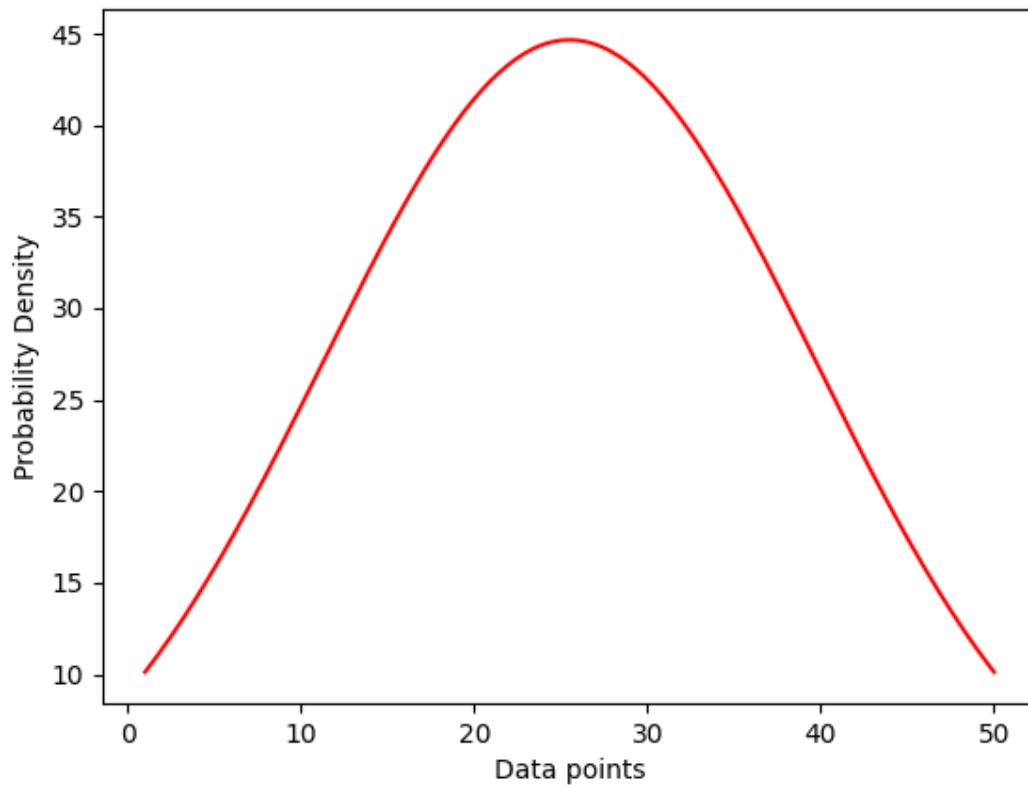
Normal Distribution using Numpy

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

mu, sigma = 0.5, 0.1
s = np.random.normal(mu, sigma, 1000)

# Create the bins and histogram
count, bins, ignored = plt.hist(s, 20, normed=True)

# Plot the distribution curve
plt.plot(bins, 1/(sigma * np.sqrt(2 * np.pi)) *
   np.exp( - (bins - mu)**2 / (2 * sigma**2) ),         linewidth=3,
color='y')
plt.show()
```