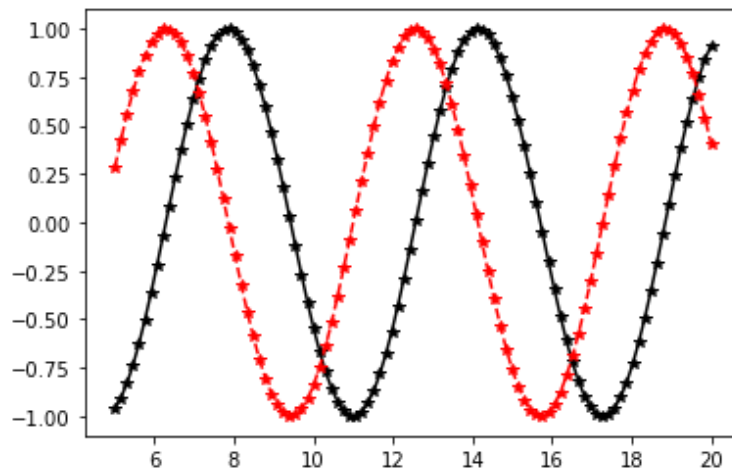


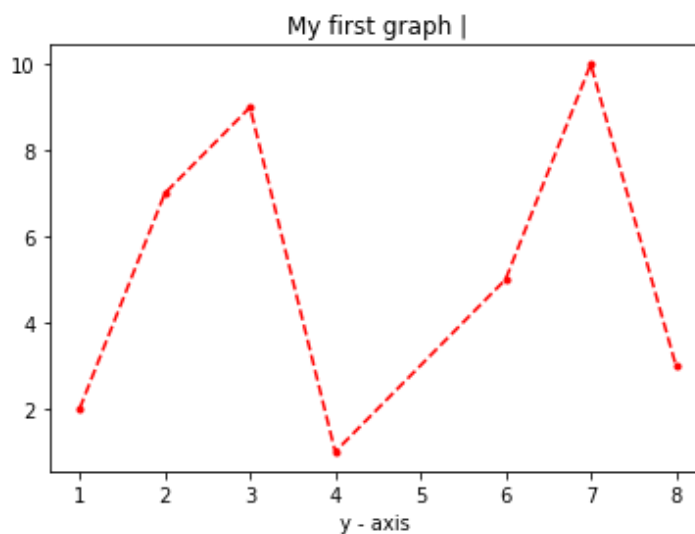
In [2]:

```
1 # Program 5-(a): Plotting sine and cosine curves
2 %matplotlib inline
3 import matplotlib.pyplot as plt
4 import numpy as np
5 fig = plt.figure()
6 ax = plt.axes()
7 x = np.linspace(5, 20, 100)
8 plt.plot(x, np.sin(x), 'k-*')
9 plt.plot(x, np.cos(x), 'r--*');
10
```

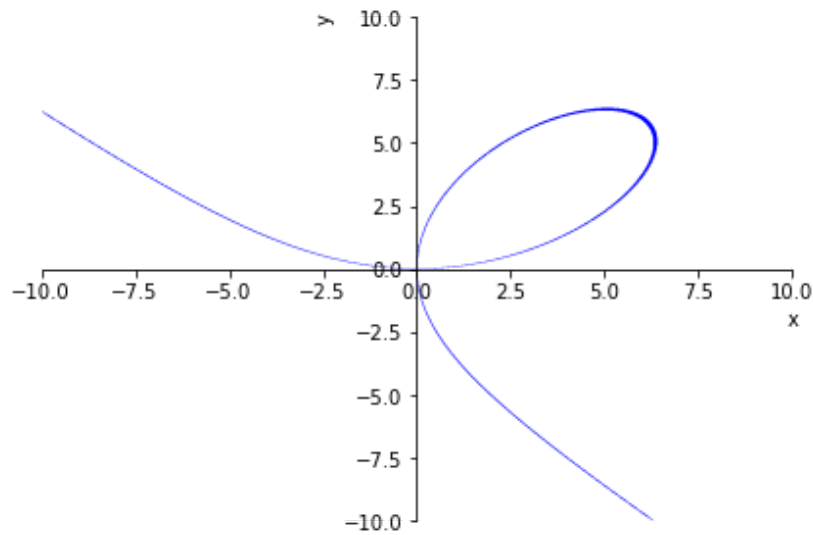


In [3]:

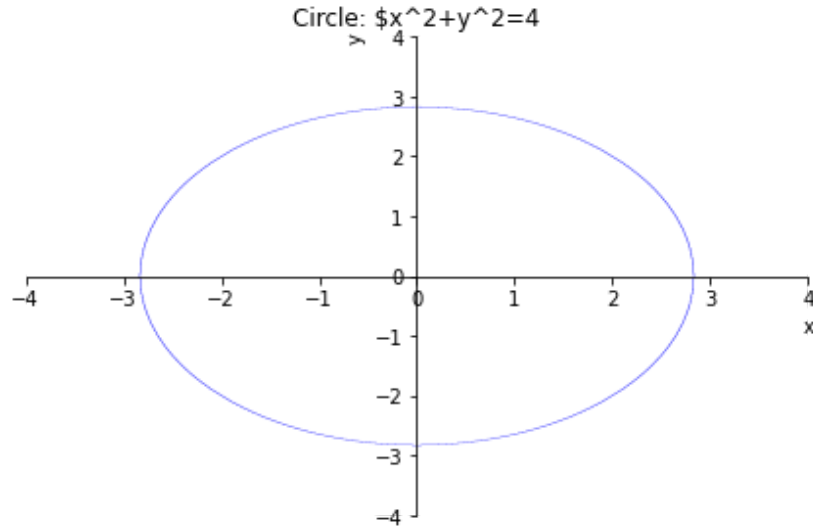
```
1 #program-5(b): Plotting a Line(Line plot)
2 import numpy as np
3 import matplotlib . pyplot as plt
4 x=[1 ,2 ,3 ,4 ,6 ,7 ,8]
5 y=[2 ,7 ,9 ,1 ,5 ,10 ,3]
6 plt . plot (x , y , 'r--.')
7 plt . xlabel ('x - axis ')
8 plt . ylabel ('y - axis ')
9 plt . title ('My first graph |')
10 plt . show()
```



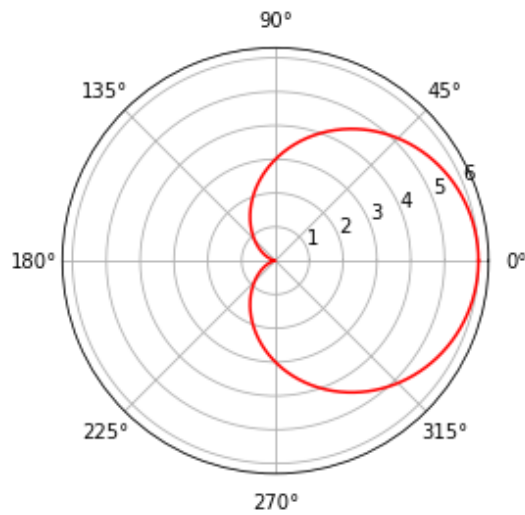
```
In [5]: 1 #Program - 5(c):Plotting a folium of de- cartes
2 from sympy import plot_implicit, symbols, Eq
3 x, y = symbols('x y')
4 p1=plot_implicit(Eq(x**3+y**3,3*4*x*y),(x,-10,10),(y,-10,10),Title='Folium
5
```



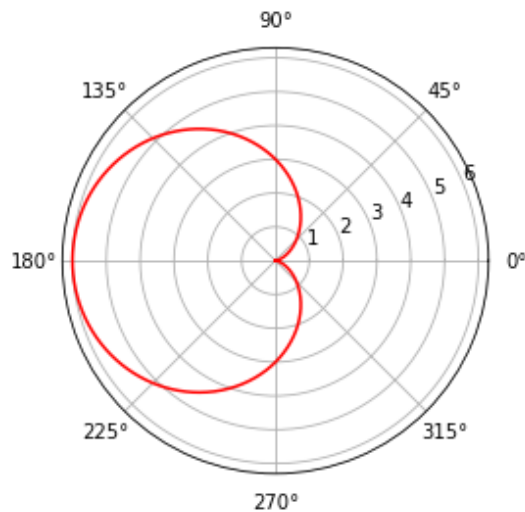
```
In [6]: 1 #Program- 5(d) : Plotting a circle
2 from sympy import plot_implicit, symbols, Eq
3 x, y = symbols('x y')
4 p1=plot_implicit(Eq(x**2+y**2, 8),(x,-4,4),(y,-4,4),title= 'Circle: $x^2+y^2
```



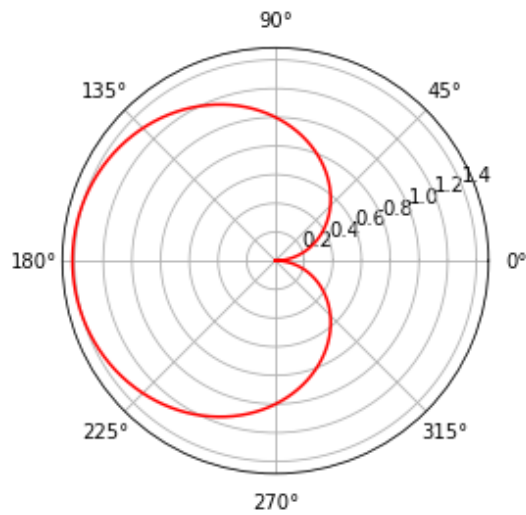
```
In [7]: 1 #Program-5(e) : Plot cardioid  $r=3(1+\cos \theta)$ 
2 from pylab import *
3 theta = linspace (0 , 2*np .pi , 1000 )
4 r1=3+3*cos (theta )
5 polar ( theta , r1, 'r')
6 show()
```



```
In [8]: 1 #Program 5-(f) : Plot cardioid  $r=3(1-\cos \theta)$ 
2 from pylab import *
3 theta = linspace (0, 2*np .pi , 1000)
4 r1=3-3*cos(theta)
5 polar(theta , r1 , 'r')
6 show()
```



```
In [9]: 1 #Program 5-(g):Plot cardioid  $r^2=(1-\cos \theta)$ 
2 from pylab import *
3 theta = linspace (0, 2*np .pi, 1000 )
4 r1=sqrt(1-cos(theta))
5 polar(theta, r1, 'r')
6 show()
```



```
In [10]: 1 #Program 5-(h): Plot cardioid  $2*r=(1-\cos \theta)$ 
2 from pylab import *
3 theta = linspace(0, 2*np.pi ,1000)
4 r1=(1-cos (theta))/2
5 polar (theta, r1 , 'r')
6 show()
```

