Pattern_Assignment02

March 16, 2019

```
In [57]: import numpy as np
         import matplotlib.pyplot as plt
         %matplotlib inline
```

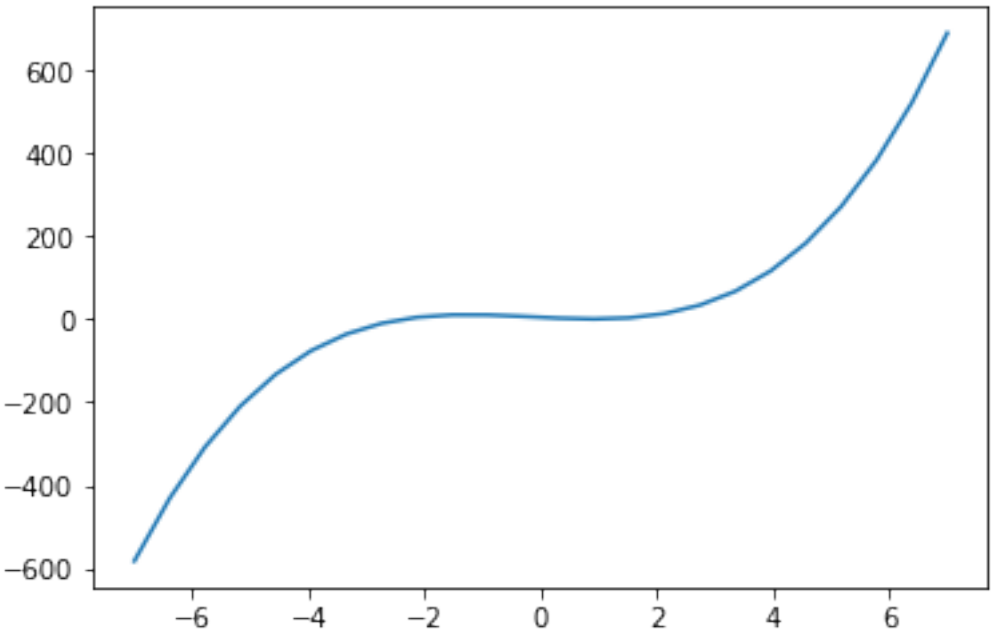
```
In [58]: #First-order Taylor approximation for cubic functions
```

$f(x) = 2x^3 + x^2 - 7x + 5$

```
In [87]: def f(x):
             return 2*x**3 + x**2 -7*x + 5  #Function definition
```

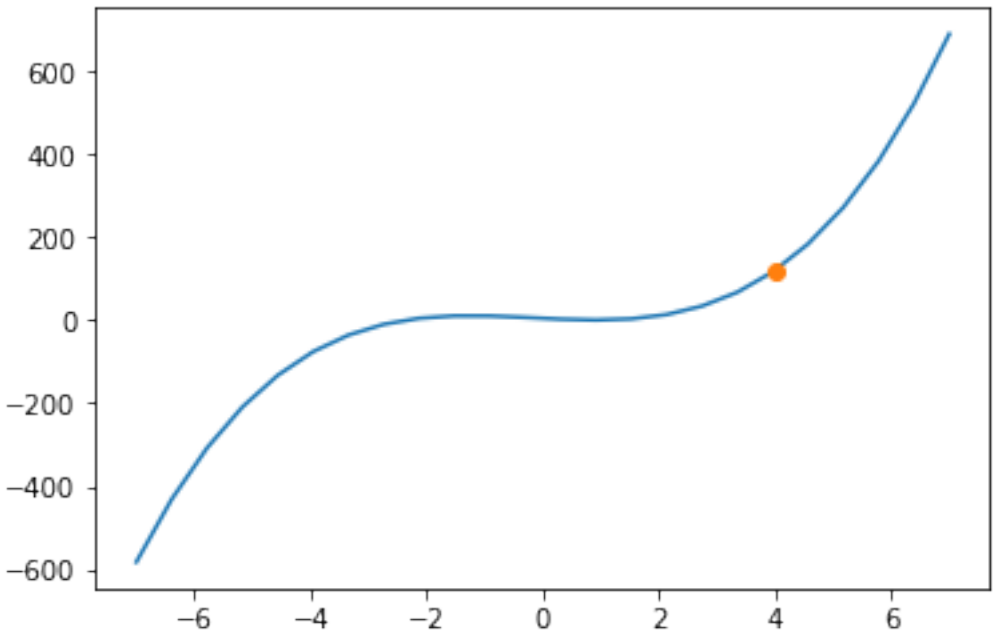
```
In [106]: x = np.linspace(-7,7,24)   #Set range
```

```
In [107]: plt.plot(x,f(x))    #Create Graph
          plt.show()
```



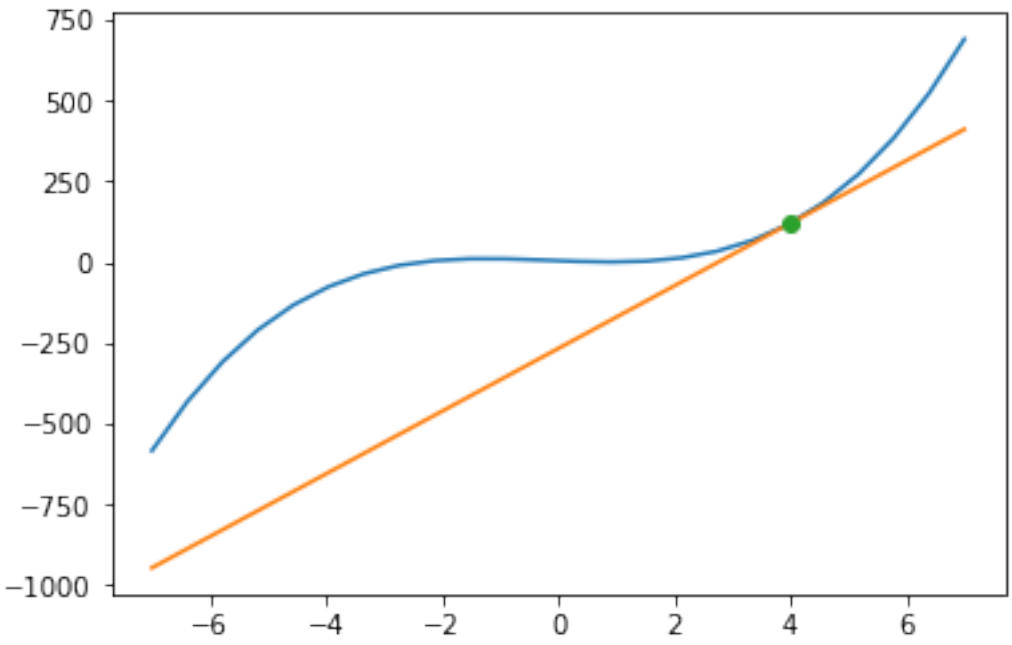
$(4, 121)$ *First − order Taylor approximation*

```
In [108]: plt.plot(x,f(x))       # (4,121) Coordinates
          plt.plot(4, 121, "o")
          plt.show()
```




```
In [111]: def f2(x):
              return 97*x - 267  #(4,121) Definition of First - order Talyor approximation

In [114]: plt.plot(x,f(x))
          plt.plot(x,f2(x))
          plt.plot(4, 121, "o")
          plt.show()
```



In [ ]: