assignment02

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2 Assignmet 02

In [2]:
```
%matplotlib inline
import matplotlib.pyplot as plt #draw graph
import numpy as np
```

3 my function

4 $y = x^2 + 4x - 2$

In [3]:
```
def f(x):
    return x*x -4*x -2
```

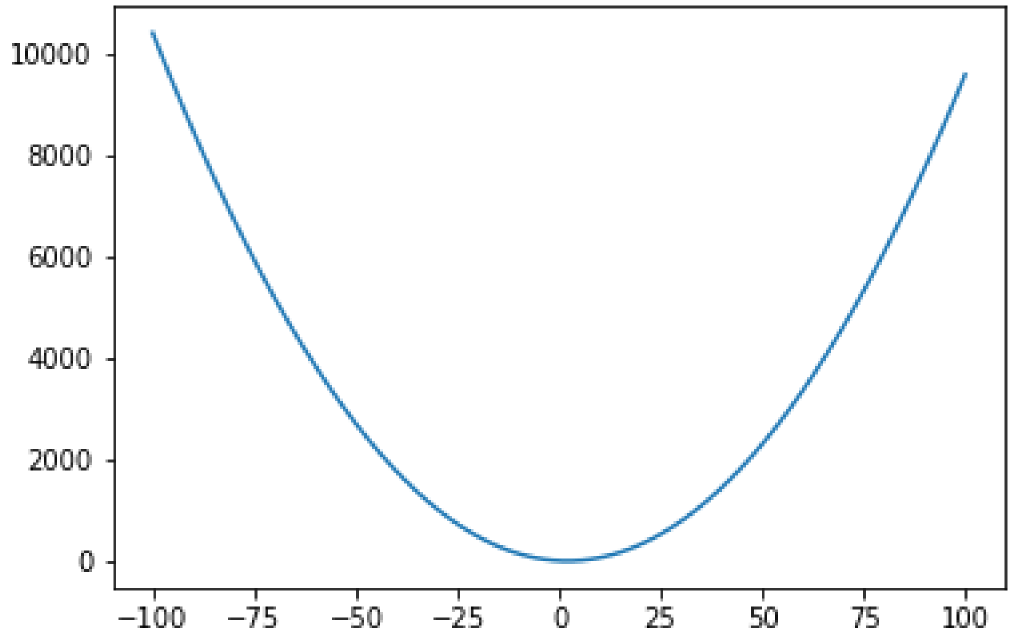
5 range(domain)

In [4]:
```
# np.arange(a,b,c) from a to b at 0.1 intervals

x = np.arange(-100,100,0.1)
y = f(x)
```

6 Plot the function

In [5]:
```
#draw graph
plt.plot(x,y, label = "myfunction")
plt.show()
```




```
In [6]: from scipy.misc import derivative #for derivation
```

```
In [7]: #dx: float, optional, spacing
        def f_prime(x):
            return derivative(f, x, dx = 1e-6)
```

7 Taylor function

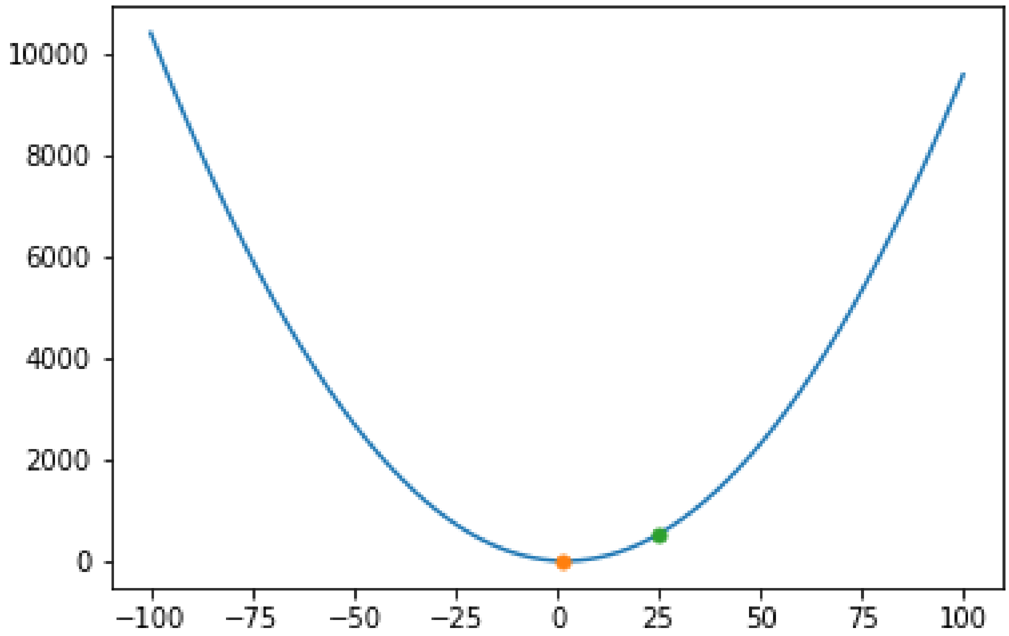
```
In [8]: def taylor_expression(x,a):
            return f(a)+f_prime(a)*(x-a)
```

8 Select two point a & b within the domain

9 and mark the selected points

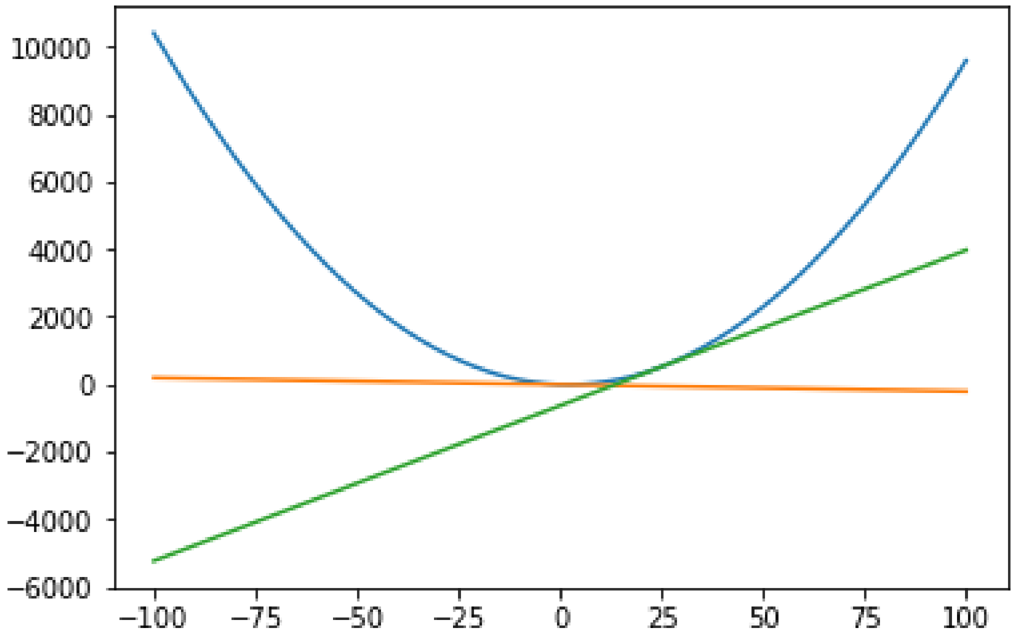
```
In [9]: plt.plot(x,y, label = "basic")

        #random point a, b
        a=1
        b=25
        plt.plot(a, f(a), marker='o', ms=5)
        plt.plot(b, f(b), marker='o', ms=5)
        plt.show()
```



10 Plot the taylor approximation

```
In [10]: #draw taylor
         plt.plot(x,y, label = "basic")
         plt.plot(x,taylor_expression(x,a),label = "taylor1")
         plt.plot(x,taylor_expression(x,b),label = "taylor2")
         plt.show()
```


10000
8000
6000
4000
2000
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25
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75
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