Practical No. 5

Aim : Implement Gradient Descent Algorithm.

Problem Statement : Develop a program in Python to create a Gradient Descent. Example by hand:

Code :

In [1]:
```
x = 2
lr = 0.01
precision = 0.000001
previous_step_size = 1
max_iter = 10000
iters = 0
gf = lambda x: (x + 3) ** 2
```

In [2]:
```
import matplotlib.pyplot as plt
```

In [3]:
```
gd = []
```

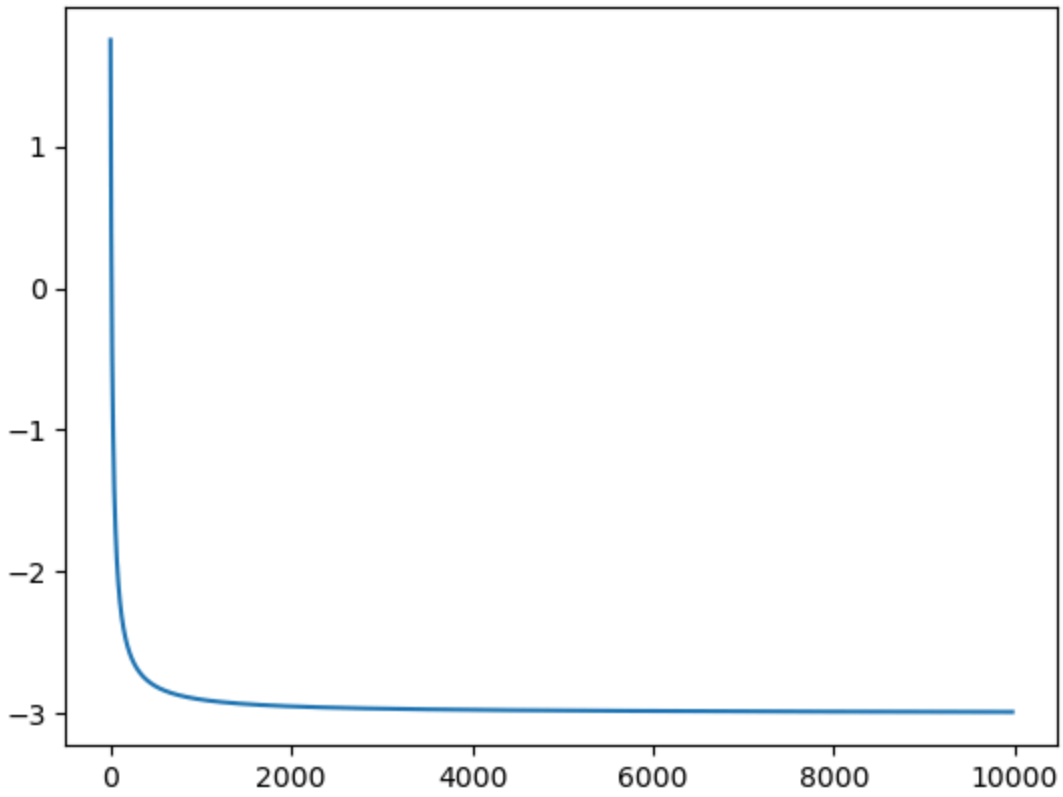
In [8]:
```
while precision < previous_step_size and iters < max_iter:
    prev = x
    x = x - lr * gf(prev)
    previous_step_size = abs (x - prev)
    iters += 1

    gd.append(x)
```

In [9]:
```
print('Local Minima : ',x)
```

```
Local Minima :  -2.990001240409911
```

In [11]:
```
plt.plot(gd)
```

Out[11]:
```
[<matplotlib.lines.Line2D at 0x1df2b9bb9d0>]
```


1
0
−1
−2
−3
0
2000
4000
6000
8000
10000