```
#!/usr/bin/env python3
# -*- coding: utf-8 -*-
"""
Created on Thu Mar 10 11:26:20 2022

@author: siobhanie
"""

import numpy as np
import matplotlib.pyplot as plt

"""
#Önving 6.3
W = np.array([[10,20,30],
              [-10,-1,-18],
              [40,20,50],
              [-5,-10,-3]])

a0 = np.array([[3],
               [1],
               [-1]])

b0 = np.array([[-3],
               [-10],
               [1],
               [-4]])

sigma = lambda x: 1/(1+np.exp(-x))


newvec1 = W@a0
newvec2 = newvec1 + b0
newvec3 = sigma(newvec2)
#print(newvec3)
"""

"""
#Önving 6.4
W = np.array([[-10,-20,-30],
              [10,1,18],
              [40,20,50],
              [5,10,3]])

a0 = np.array([[3],
               [4],
               [-1]])

b0 = np.array([[-3],
               [10],
               [1],
               [-4]])

sigma = lambda x: 1/(1+np.exp(-x))
```

```
newvec1 = W@a0
newvec2 = newvec1 + b0
newvec3 = sigma(newvec2)
"""

"""
#Övning 6.7
f = lambda x: 2*x**2 - x + 2
fprim = lambda x: 4*x - 1

gamma = 0.2
m = 5
x0 = 2

x1 = x0 - gamma*fprim(x0)
x2 = x1 - gamma*fprim(x1)
x3 = x2 - gamma*fprim(x2)
x4 = x3 - gamma*fprim(x3)
x5 = x4 - gamma*fprim(x4)


#med for-loop
xold = x0
for i in range(m):
    xnew = xold - gamma*fprim(xold)
    xold = xnew
    #print(xnew)



iterates = np.array([x0,x1,x2,x3,x4,x5])
f_of_its = f(iterates)

xs = np.linspace(-1,x0,100)
ys = f(xs)

plt.plot(xs,ys)
plt.plot(iterates,f_of_its,'*')
"""
"""

#Övning 6.8
f = lambda x: 4*x**2 + 2*x + 2
fprim = lambda x: 8*x + 2

gamma = 0.08
m = 1000
x0 = 0

x1 = x0 - gamma*fprim(x0)
x2 = x1 - gamma*fprim(x1)
x3 = x2 - gamma*fprim(x2)
x4 = x3 - gamma*fprim(x3)
x5 = x4 - gamma*fprim(x4)
x6 = x5 - gamma*fprim(x5)
```

```
#med for-loop
xold = x0
for i in range(m):
    xnew = xold - gamma*fprim(xold)
    xold = xnew
    print(xnew)


iterates = np.array([x0,x1,x2,x3,x4,x5,x6])
f_of_its = f(iterates)

xs = np.linspace(-1,x0,100)
ys = f(xs)

plt.plot(xs,ys)
plt.plot(iterates,f_of_its,'*')
"""

"""
#Figur 6.11
f = lambda x: np.sin(0.8*x[0])*np.sin(0.6*x[1])*np.exp(0.1*x[0])
fprim = lambda x:
 np.array([np.exp(0.1*x[0])*np.sin(0.6*x[1])*(0.1*np.sin(0.8*x
 [0])+0.8*np.cos(0.8*x[0])),
                            0.6*np.exp(0.1*x[0])*(np.sin(0.8*x
                             [0])*np.cos(0.6*x[1]))])

x0 = np.array([[2],[-2]])
gamma = 0.1


m=500
xold=x0
for i in range(m):
    xnew = xold - gamma*fprim(xold)
    xold = xnew
    print(xnew)
    print(' ')
"""
```