```
%matplotlib inline
import matplotlib
import matplotlib.pyplot as plt
import pandas as pd
```

ZAD 1

```
def y_(sum):
    if sum > 0:
        return 1
    else:
        return -1

def suma(xi, xi2, w1, w2, x0, Theta):
    sum = xi * w1 + xi2 * w2 + Theta * x0
    return sum

x1 = [2, 2, 0, -2, -2, 0, 4]
x2 = [1, 2, 6, 10, 0, 0, -20]
#x2 = [1, 2, -16, 10, 0, 0, -20]
d = [1, 1, 1, -1, -1, -1, -1]
w = [0, 0, 0]
#Theta = 0
iterator = 0
x0 = 1
plt.scatter(x1,x2)
while True:
    z = True
    for i in range(7):
        y = y_(suma(x1[i], x2[i], w[0], w[1], x0, w[2]))
        if y != d[i]:
            w[0] = w[0] + d[i] * x1[i]
            w[1] = w[1] + d[i] * x2[i]
            w[2] = w[2] + d[i] * x0
            z = False
        print(y , d[i])
    iterator += 1
    print()
    print(iterator)
    print()
    if z:
        break

print("w 0 =", w[2] , "w 1 =", w[0] , "w 2 =", w[1])
```

```
1 1
1 1
1 -1
-1 -1
-1 -1
-1 -1

32

-1 1
1 1
1 1
1 -1
-1 -1
-1 -1
1 -1

33

1 1
1 1
1 1
1 -1
-1 -1
-1 -1
-1 -1

34

1 1
1 1
1 1
1 -1
-1 -1
-1 -1
1 -1

35

1 1
1 1
1 1
1 -1
-1 -1
-1 -1
-1 -1

36

-1 1
1 1
```