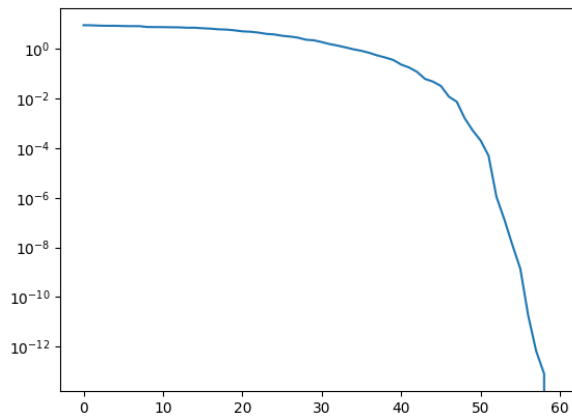


### HW 3

Shai Kimhi -318605516, Dan Navon – 201518883

#### 1.2



#### 1.3.4

1.3.4

$$F(x|w) = w_3^T x_3 + b_3$$
$$x_3 = \varphi(w_2^T x_2 + b_2)$$
$$x_2 = \varphi(w_1^T x + b_1)$$
$$\underline{F(x|w)} = w_3^T \cdot \varphi(w_2^T \varphi(w_1^T x + b_1) + b_2) + b_3$$

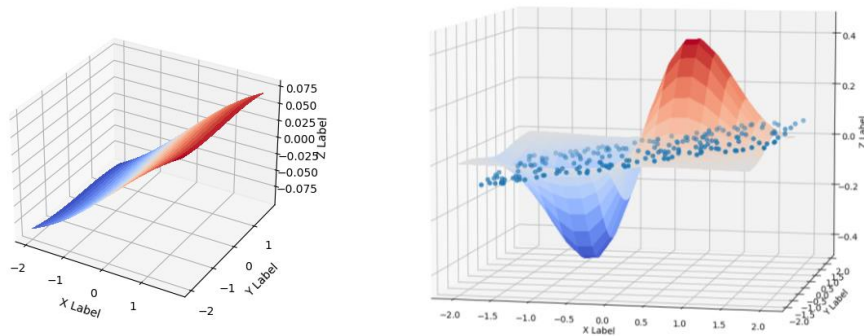
$w_1 \in \mathbb{R}^{2 \times 4}$	$b_1 \in \mathbb{R}^4$
$w_2 \in \mathbb{R}^{4 \times 3}$	$b_2 \in \mathbb{R}^3$
$w_3 \in \mathbb{R}^3$	$b_3 \in \mathbb{R}$

#### 1.3.7

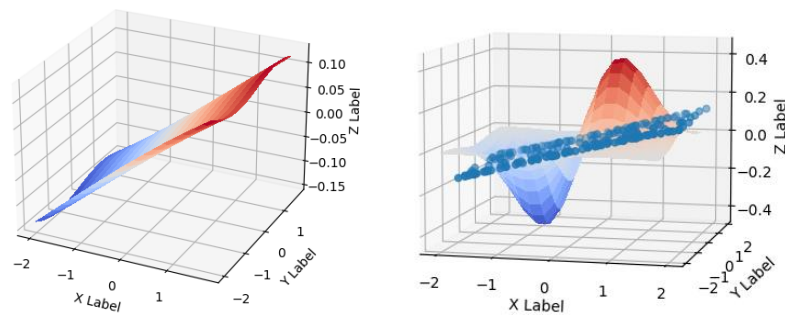
$$\frac{\partial L}{\partial F(x_i | w)} = 2(F(x_i | w) - y_i)$$

### 1.3.14

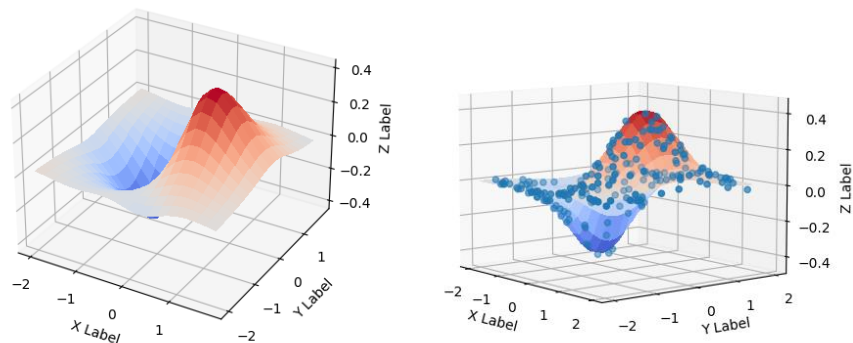
Eps=  $10^{-1}$ , function approximation, test set over real function:



Eps=  $10^{-2}$ , function approximation, test set over real function:



Eps=  $10^{-3}$ , function approximation, test set over real function:



Eps=  $10^{-4}$ , function approximation, test set over real function:

