Q1. Logistic Function 2

The logistic function is defined as follows f(x) =1/(1+e^(-Wx-B)) where W and B are parameters. What would happen if B increases?

- The centre point of the function moves to the right

  The centre point of the function moves to the right

- The slope of logistic function decreases

  The slope of logistic function decreases

- The slope of the logistic function increases ✗

  The slope of the logistic function increases

- The centre point of the function moves to the left ✓

  The centre point of the function moves to the left

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Q2. Partial Derivative Of Cross Entropy

Suppose we have been given a dataset with only one point (x,y) in it. We will now define a new loss function known as the cross entropy loss function as follows : L(w,b) = -y*log(f(x)), where f(x) is the logistic function with parameters W and B. Note that y is the true value given x whereas f(x) is the output of the model given x as the input. What will be the partial derivative of the cross entropy loss function with respect to W and B. Let 'M' be the partial derivative with respect to 'W' and 'N' be that with respect to 'B' then

- M = y*(1-f(x))*x ; N = y*(1-f(x))
  M = y*(1-f(x))*x ; N = y*(1-f(x))
- M = -y*(1-f(x)) ; N = -y*(1-f(x))
  M = -y*(1-f(x)) ; N = -y*(1-f(x))
- M = -y*(1-f(x))*x ; N = -y*(1-f(x))
  M = -y*(1-f(x))*x ; N = -y*(1-f(x))

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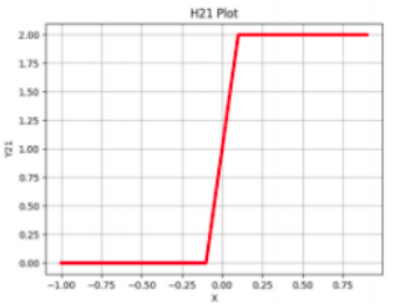
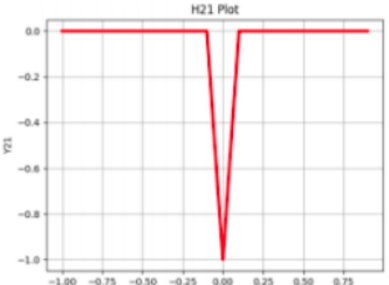
Q3. Select The Plot

Consider the variable x and the functions h11(x), h12(x) and h21(x) such that
h11(x) = 1/(1+e-(400x+24))
h12(x) = 1/(1+e-(400x-24))
h21(x) = h11(x) - h12(x)
Which of the following figures shows the correct plot of the function h21(x) ?for x ε (-1,1)



![Option1](https://i.imgur.com/GfVq8n9.png)



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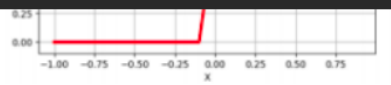
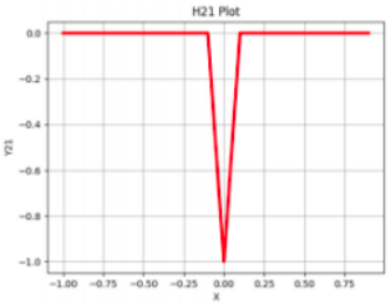
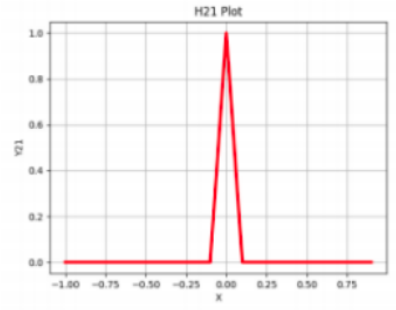


![Option1](https://i.imgur.com/GfVq8n9.png)



![Option2](https://i.imgur.com/Vtb0vKW.png)



![Option3](https://i.imgur.com/uPFQucq.png)

Result

1 2 3

4 5 6

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Q4. Logistic Function 1

The logistic function is defined as follows f(x) =1/(1+e^(-Wx-B)) where W and B are parameters. What would happen if W increases?

- The slope of logistic function decreases

  The slope of logistic function decreases

- The slope of the logistic function increases ✓

  The slope of the logistic function increases

- The centre point of the function moves to the left

  The centre point of the function moves to the left

- The centre point of the function moves to the right

  The centre point of the function moves to the right

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Q5. A Perceptron Is:

A perceptron is:

- a single layer feed-forward neural network with preprocessing`

  a single layer feed-forward neural network with preprocessing

- an autoassociative neural network

  an autoassociative neural network

- a double layer autoassociative neural network

  a double layer autoassociative neural network

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Q6. XNOR MLP

For this question let us take True = +1 and False = -1. Consider the Multilayer perceptron network shown in the figure with 2 inputs. X1 and x2 and 4 perceptrons in the hidden layer. The outputs of these 4 perceptrons are denoted by h1, h2,h3,h4. Each input is connected to all the 4 perceptrons with specific weights represented by red and blue edges in the figure below. The bias (w0) of each perceptron is -2. Each of these perceptrons is connected to an output perceptron by weights w1,w2,w3,w4. The output of the perceptron (y) is the output of the network. We have to find the weights w1,w2,w3,w4 such that this network represent the truth

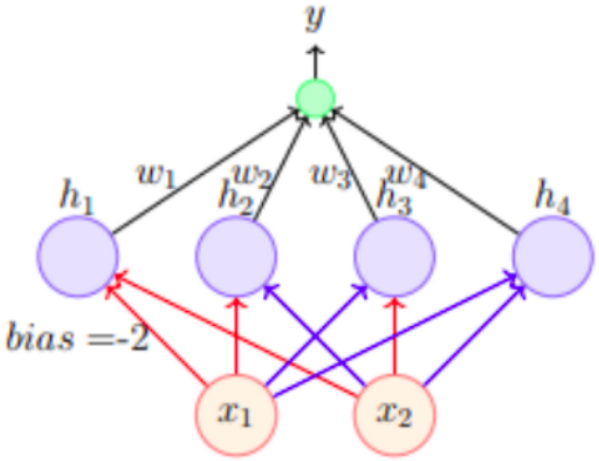


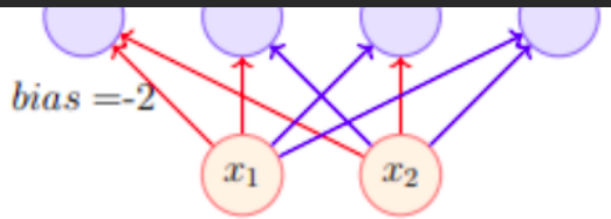
table of XNOR boolean function with 2 inputs.

Under which of the following condition will the above network behave as XNOR boolean function?

- w2>=w0, w3>=w0, w4<w0, w1<w0
- w2>=w0, w3>=w0, w4<w0, w1<w0

Result

1 2 3
4 5 6
7 8



red edge indicates $w = -1$
blue edge indicates $w = +1$

table of XNOR boolean function with 2 inputs.
condition will the above network behave as XNOR boolean function?

Under which of the following

w2>=w0, w3>=w0, w4<w0, w1<w0

w2>=w0, w3>=w0, w4<w0, w1<w0

w1=w0, w2=w0, w3=w0, w4=w0

w1=w0, w2=w0, w3=w0, w4=w0

w1>=w0, w4>=w0, w2<w0, w3<w0,

w1>=w0, w4>=w0, w2<w0, w3<w0,

w1>=w0, w2=w0, w3=w0, w4>=w0

w1>=w0, w2=w0, w3=w0, w4>=w0

Result

Q7. Numerical On MLP Neuron

A neuron with 3 inputs has the weight vector [0.2 -0.1 0.1]^T and a bias θ = 0. If the input vector is X = [0.2 0.4 0.2]^T then the total input to the neuron is:

- 1.0
  1.0
- -1.0
  -1.0 ✗
- 0.02
  0.02 ✓
- 0.2
  0.2

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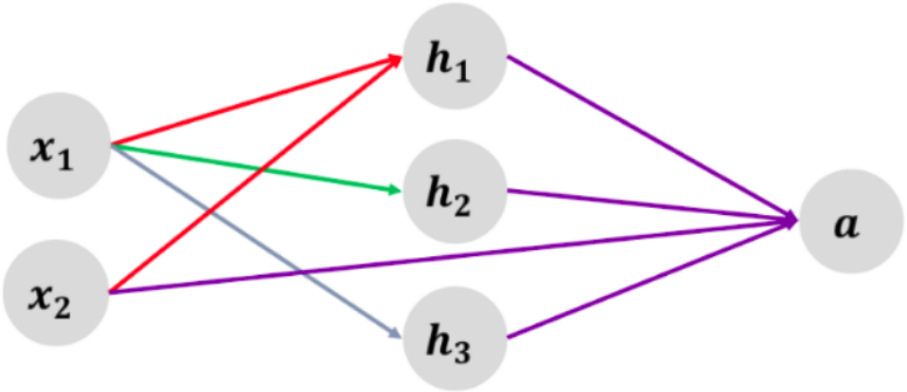
Q8. Find Derivative

Find ∂a/∂x1 from the figure where h1=x12+x2, h2=e^x1, h3=2x1, & a = 2h1+3h2+h3+x2



- 4x1+3e^x1

  4x1+3e^x1

- 4x1+3e^x1+2

  4x1+3e^x1+2

- 4x1+3e^x1+3

  4x1+3e^x1+3

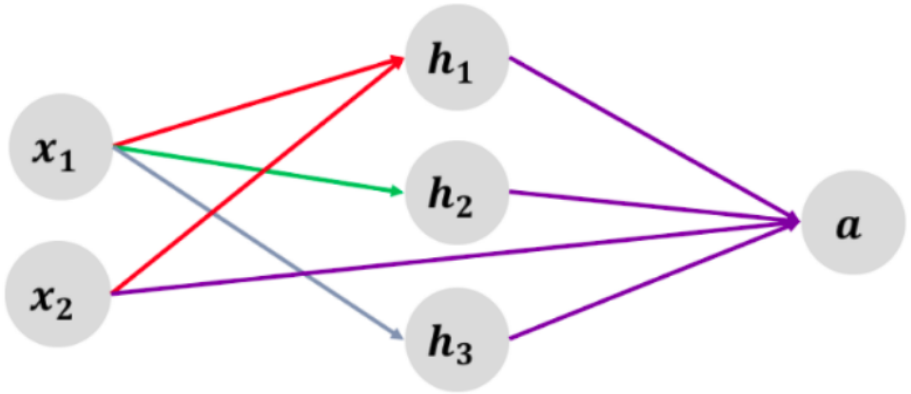
Result

1 2 3

4 5 6

7 8

Find ∂a/∂x1 from the figure where h1=x12+x2, h2=e^x1, h3=2x1, & a = 2h1+3h2+h3+x2



4x1+3e^x1

4x1+3e^x1

4x1+3e^x1+2

4x1+3e^x1+2

4x1+3e^x1+3

4x1+3e^x1+3

Result

1 2 3

4 5 6

7 8