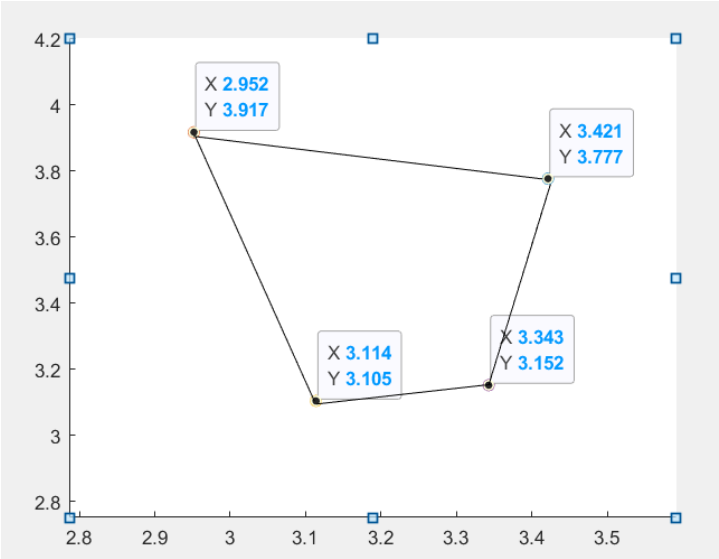
Task2.3

There are four points in Polygon A
Point1:(3.42138,3.7766)
Point2:(2.95182,3.91687)
Point3:(3.1137,3.10461)
Point4:(3.34277,3.15222)



Due to the equation Y=k*x + b
Line between point 1 to 2: y = -0.29873x + 4.79866
Line between point 2 to 3: y = -5.01767x + 18.72812
Line between point 3 to 4: y = 0.20784x + 2.45746
Line between point 4 to 1: y = 7.94276x - 23.39858

Line12: y+0.29873x-4.79866 <= 0
Convert line12 by multiply by -1: -y-0.29873x + 4.79866 >= 0
Normalize line12 to get the weight vector: 1-0.0623x-0.2084y >= 0
Then we use the normalize equation to get the weight.
W(1,1,0): 1
W(1,1,1): -0.0623
W(1,1,2): -0.2084

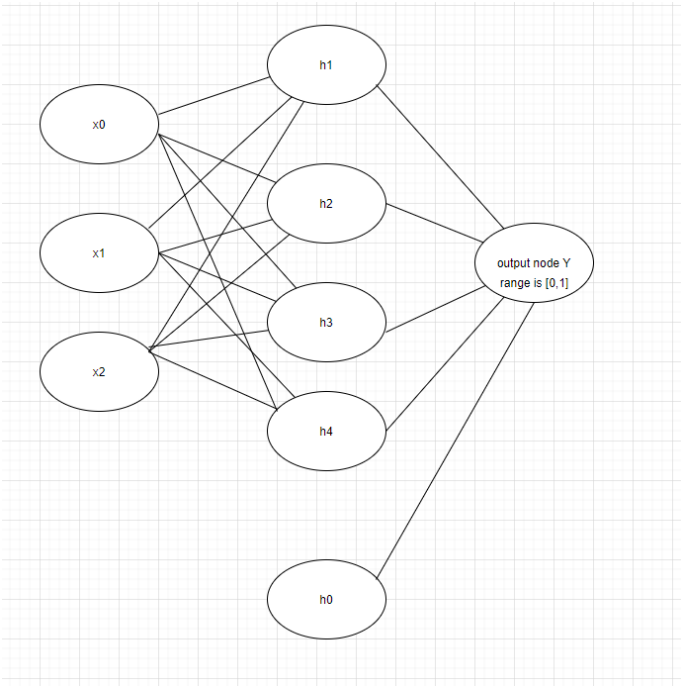
Line23: y+5.01767x-18.72812 >= 0
Normalize line23 to get the weight vector: -1+0.2679x+0.0534y >= 0
Then we use the normalize equation to get the weight
W(1,2,0): -1
W(1,2,1): 0.2679
W(1,2,2): 0.0534

Line34: y-0.20784x-2.45746 >= 0
Normalize line34 to get the weight vector: -1-0.0846x+0.4069y >= 0
Then we use the normalize equation to get the weight
W(1,3,0): -1
W(1,3,1): -0.0846
W(1,3,2): 0.4069

Line41: y-7.94276x + 23.39858 >= 0
Normalize line41 to get the weight vector : 1-0.3395x + 0.0427y >=0
Then we use the normalize equation to get the weight
W(1,4,0): 1
W(1,4,1): -0.3395
W(1,4,2): 0.0427

We can get the vector (3-by-1) of each weight now
W1 = [1; -0.0623; -0.2084]
W2 = [-1; 0.2679; 0.0534]
W3 = [-1; -0.0846; 0.4069]
W4 = [1; -0.3395; 0.0427]

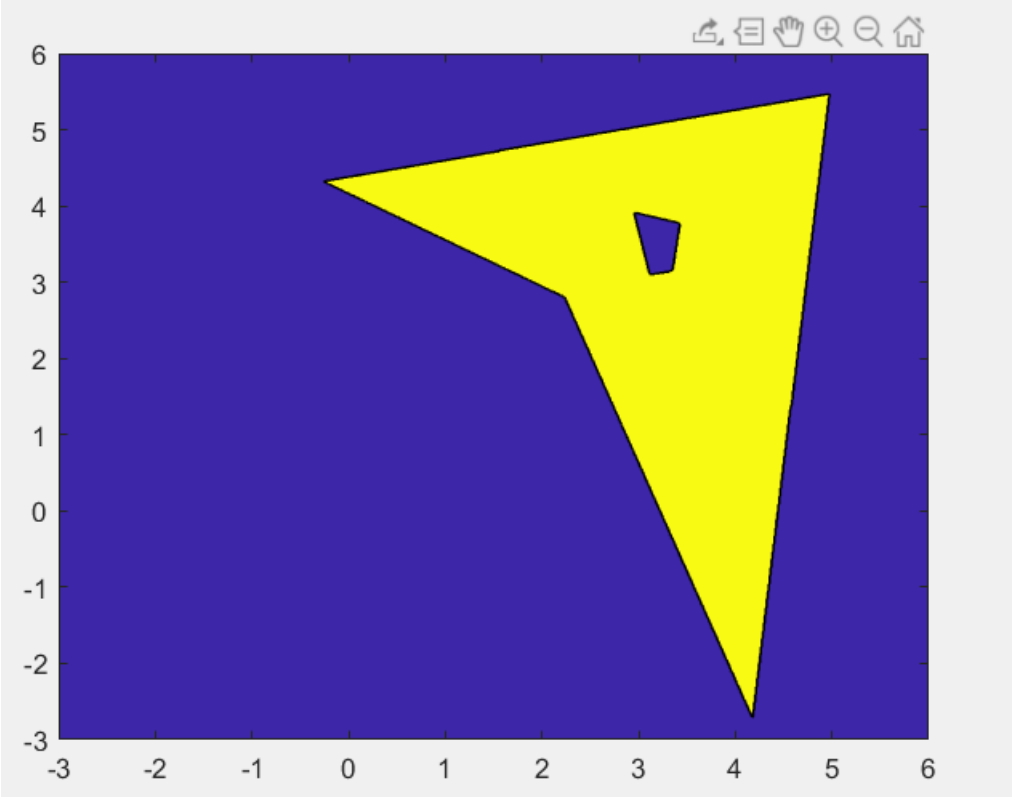
Structure of network



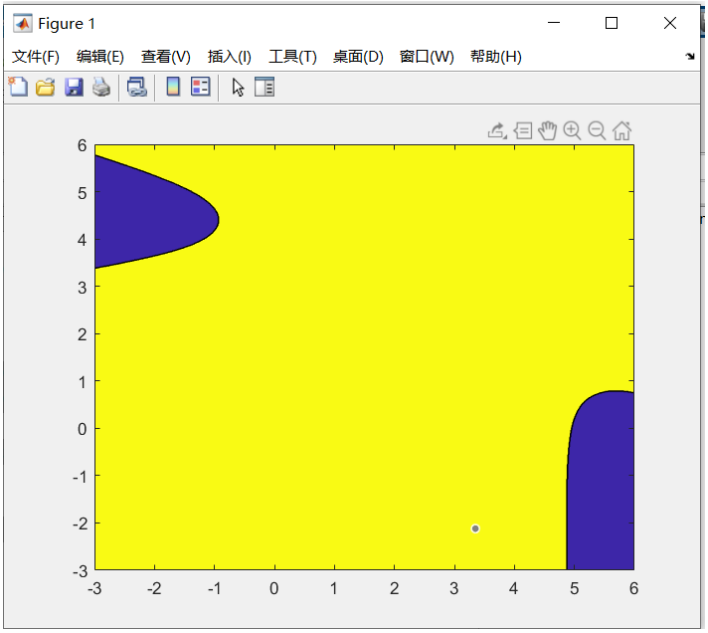
x0, x1, x2 are nodes in input layer, x0 is the bias for input data which x0 inputs 1.
h0, h1, h2, h3, h4 are nodes in hidden layer, h0 is the bias in hidden layer.
y is the ouptut node, which range is [0, 1]

Task1_10

When we multiply the weight by a big number like 1000, the diagram looks like the same as the task2_hNN_AB().



This is the diagram that the weight multiply by 1000.



This is the diagram that weight multiplyed by 10