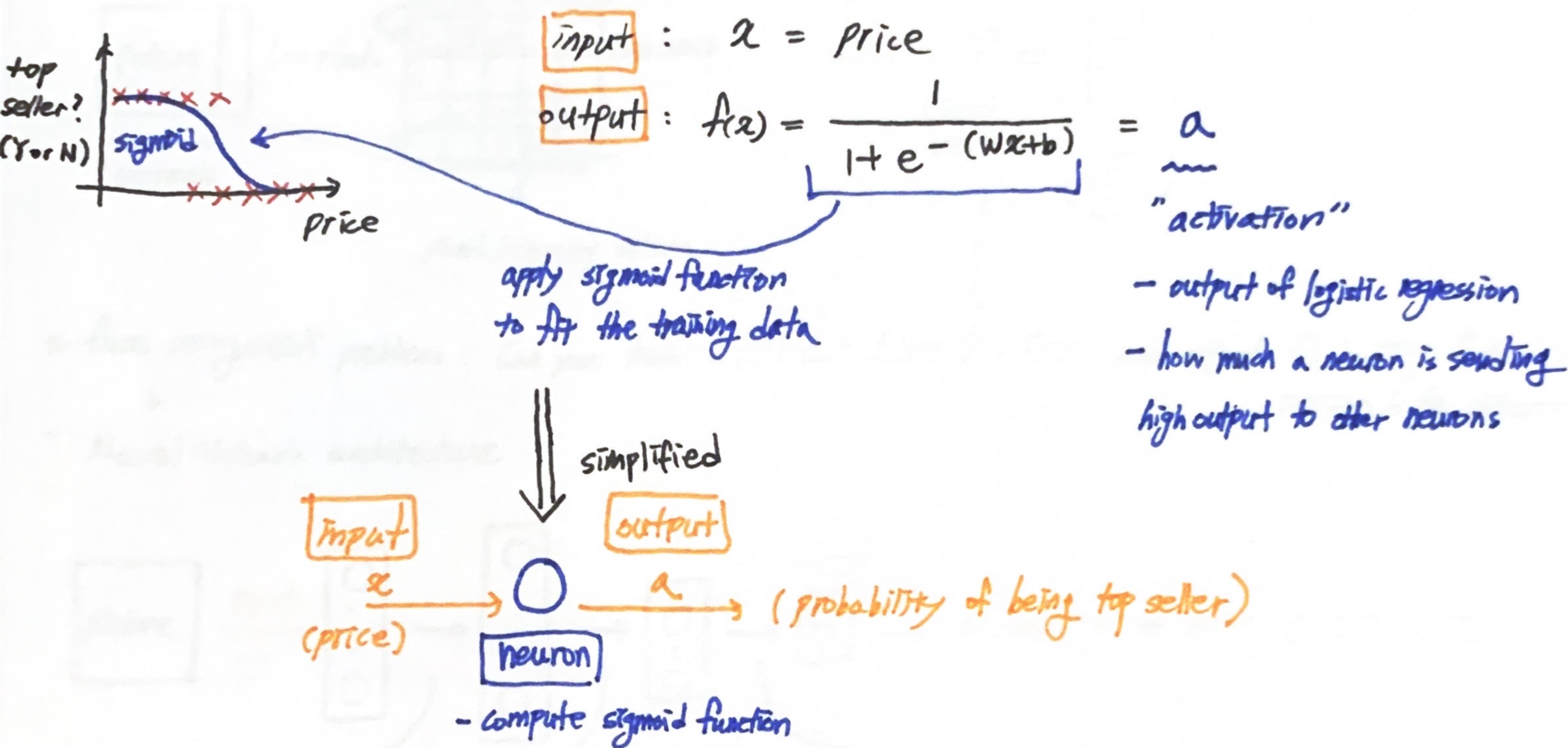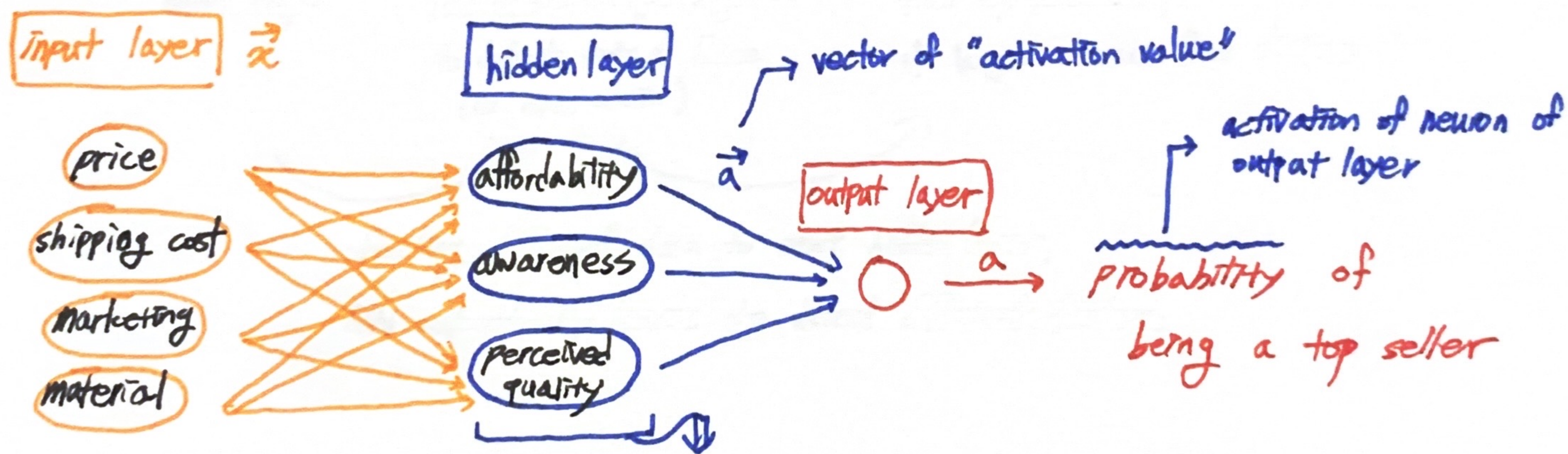ex) Demand Prediction with Logistic Regression : Which T-shirt became a top seller?

i) 1 feature (price)

input : x = price

output : $f(x) = \dfrac{1}{1+e^{-(wx+b)}} = a$

"activation"

– output of logistic regression

– how much a neuron is sending high output to other neurons

apply sigmoid function to fit the training data

⇓ simplified

input ___ output

$\underset{(price)}{x} \longrightarrow \bigcirc \overset{a}{\longrightarrow}$ (probability of being top seller)

[neuron]

– compute sigmoid function

ii) more features

input layer $\vec{x}$

price
shipping cost
marketing
material

hidden layer → vector of "activation value"

affordability
awareness
perceived quality

$\vec{a}$

output layer

activation of neuron of output layer

$\bigcirc \overset{a}{\longrightarrow}$ probability of being a top seller

"activation"

– degree that sending high output value to other neurons
– affordability, awareness, perceived quality are the activation of these neurons of hidden layer

① input layer
– vector of input features ($\vec{x}$)
  ↓ input
② hidden layer
– uses input features to compute output ($\vec{a}$)
  ↓
③ output layer
– uses outputs of hidden layer ($\vec{a}$) as input and output (a)
                              compute