

Question 4

~~4a~~ 4d) $x_1 = 0.8$

$$x_2 = -0.22$$

$$x_3 = 0.12$$

$$0.8 \times 0.1 = 0.08$$

$$-0.22 \times -0.4 = 0.088$$

$$0.12 \times 0.22 = 0.0264$$

$$\Sigma = 0.1944$$

$$+ \text{Bias} = 0.4944$$

$$\text{ReLU } y = \phi x + \phi$$

$$\phi(y) = 0.4944$$

$$\text{logistic } \phi(y) = \frac{1}{1 + e^{-0.4944}}$$

$$= \frac{1}{1 + \frac{1}{e^{0.4944}}}$$

$$= \frac{1}{1.609937}$$

$$= 0.621142$$

We use ReLU over logistic functions as they are ~~even~~ simple and fast to compute. They also do not suffer from the vanishing gradient as some of the other functions, as all functions must be differentiable at all points.