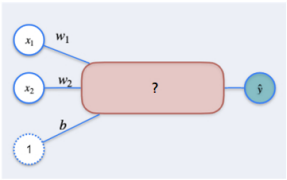
1. **Given the Single Layer Perceptron described in the lectures:** 1 point



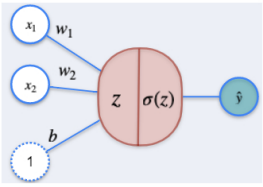
What should be replaced in the question mark?

- ○ $w_1w_2 + x_1x_2 + b$
- ○ $w_1x_1 + w_2x_2 + b_1 + b_2$
- ◉ $w_1x_1 + w_2x_2 + b$
- ○ $w_1x_2 + w_2x_1 + b$

2. **For a Regression using a Single Layer Perceptron, select all that apply:** 1 point

- ☐ **The Loss Function used is** $L(y, \hat{y}) = -y\ln(\hat{y}) - (1-y)\ln(1-\hat{y})$.
- ☑ **The Loss Function used is** $L(y, \hat{y}) = \frac{1}{2}(y-\hat{y})^2$.
- ☑ **To minimize the Loss Function, we consider** $L(y, \hat{y})$ **as a function of** w_1, w_2 **and** b.
- ☐ **To minimize the Loss Function, we consider** $L(y, \hat{y})$ **as a function of** x_1 **and** x_2.

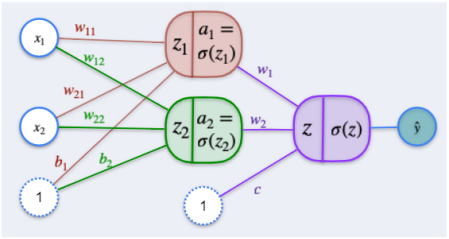
3. **Consider the problem of Classification using a Single Layer Perceptron as discussed in the lectures.** 1 point



In the figure above, z **and** $\sigma(z)$ **are, respectively:**

- ○ $z = w_1x_1 + w_2x_2 + b$ **and** $\sigma(z) = \frac{1}{2}(z-\hat{z})^2$
- ○ $z = \frac{1}{1+e^{-z}}$ **and** $\sigma(z) = w_1x_1 + w_2x_2 + b$
- ○ $z = x_1 + x_2 + b$ **and** $\sigma(z) = \frac{1}{2}(z-\hat{z})^2$
- ◉ $z = w_1x_1 + w_2x_2 + b$ **and** $\sigma(z) = \frac{1}{1+e^{-z}}$

4. **In the 2,2,1 Neural Network described below** 1 point



How many parameters must be tuned to minimize the Loss Function?

- ○ **2**
- ○ **3**
- ○ **6**
- ◉ **9**

5. **About Backpropagation, check all that apply:** 1 point

- ☐ **It is a way to obtain the input values for a given output of a neural network.**
- ☑ **It is a method to update the parameters of a neural network.**
- ☐ **It is the same as gradient descent.**
- ☑ **It is a method that starts in the output layer and finishes in the input layer.**