***Instructions***

Given the deep neural network architecture below, write all the formulas required for updating the weights in the network. Use Gradient Descent, on-line method.

**Neural network architecture:**

* 2 inputs
* 2 outputs
* 2 hidden layers
* Activation function for output nodes = **Softmax**
* Activation function for all hidden nodes = **ReLU**

**δh11**

**h21**

**h11**

**X1**

**X2**

**F1**

**F2**

**h12**

**h22**

**OF1**

**OF2**

**δh21**

**δh22**

**δh12**

**δf1**

**δf2**

Write the formulas in terms of the variables identified in the figure.

*nothing follows.*