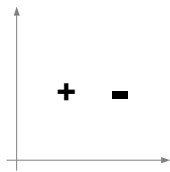
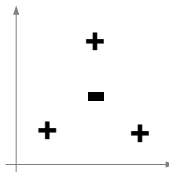


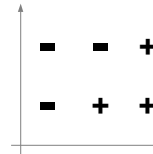
### Quiz 3, Problem 1: Neural Nets (50 pts)

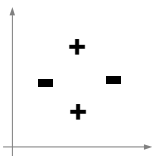
Each of the following exhibits specifies the behavior of a function of one or two inputs. Some behaviors are specified with verbal descriptions. Other behaviors are specified with graphs of desired output plotted as a function of input: points marked with “+” should produce an output of 1, while points marked with “-” should produce an output of 0.

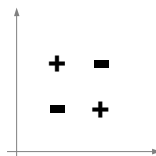
Your task is to choose which of the neural nets on the following page could produce each desired behavior if given suitable weights. For each desired behavior, list **all** possible nets that could produce it. If none could, write NONE instead. All neural net thresholds use the unit step function, and threshold inputs are not drawn. If a neural net has only one input, you may choose whether that input receives x-values or y-values. You may choose the same neural net more than once, and some may not be used at all.



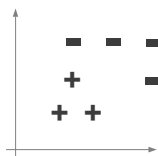






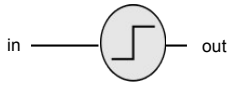




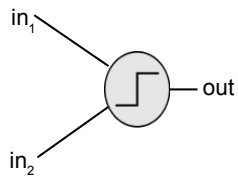



A function which takes as input a temperature in degrees Celsius; it returns one if its input is in a certain (fixed) range of degrees Fahrenheit, otherwise zero.

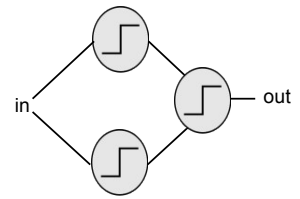
A function which returns one if its inputs are within a certain (fixed) distance of each other, otherwise zero.



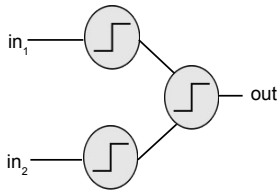
**A**



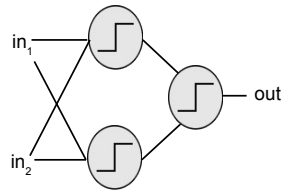
**B**



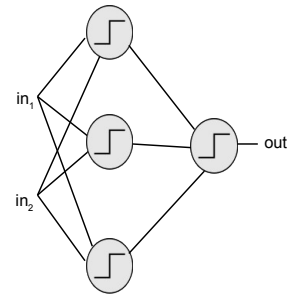
**C**



**D**



**E**



**F**

These are the neural nets you may use. You may choose any values for the weights of the wires.