

Homework #4 – Due March 23

- Consider a perceptron with a threshold activation function. The output of the perceptron is either +1 or -1 depending on whether the linear combination of the input values is respectively positive or negative. We want to explore the possibility of using perceptrons to realize Boolean functions, where the truth value is represented by +1 and the false value is represented by -1.
 - Show that the AND Boolean function of n Boolean variables can be realized by a perceptron. Start with the case $n=2$, and then generalize your solution.
 - How about the OR Boolean function of n Boolean variables?
 - Consider the exclusive OR Boolean function of two variables (output is equal to +1 if and only if exactly one of the variables is equal to +1). Can this be realized by a perceptron? Explain your answer.