1819-108-W10-REBCO4-HW

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- The sigmoid function (or logistic)

$$\phi(x) = \frac{1}{1 + exp(-x)}.$$

- The hyperbolic tangent function ("tanh")

$$\phi(x) = \frac{exp(x) - exp(-x)}{exp(x) + exp(-x)} = \frac{exp(2x) - 1}{exp(2x) + 1}.$$

- The hard threshold function

$$\phi_\beta(x) = 1_{x \geq \beta}.$$

- The Rectified Linear Unit (ReLU) activation function

$$\phi(x) = max(0, x).$$

Here is a schematic representation of an artificial neuron whre $\sum = (w_j, x) + b_j$.