Introduction to Deep Learning

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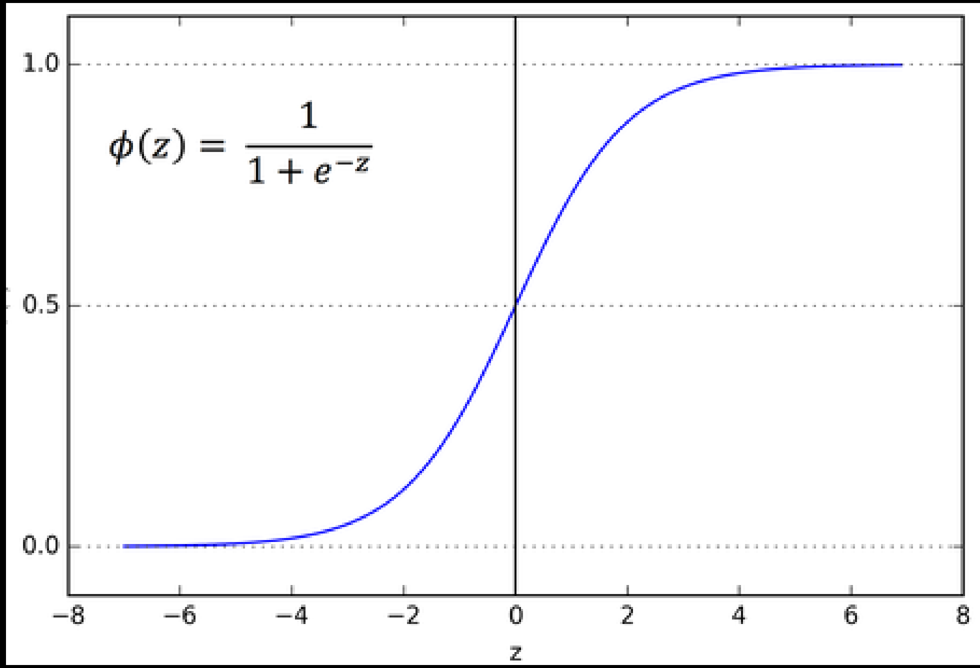
Activation functions

Defines the output of a neuron given a set of inputs.

Constraints:

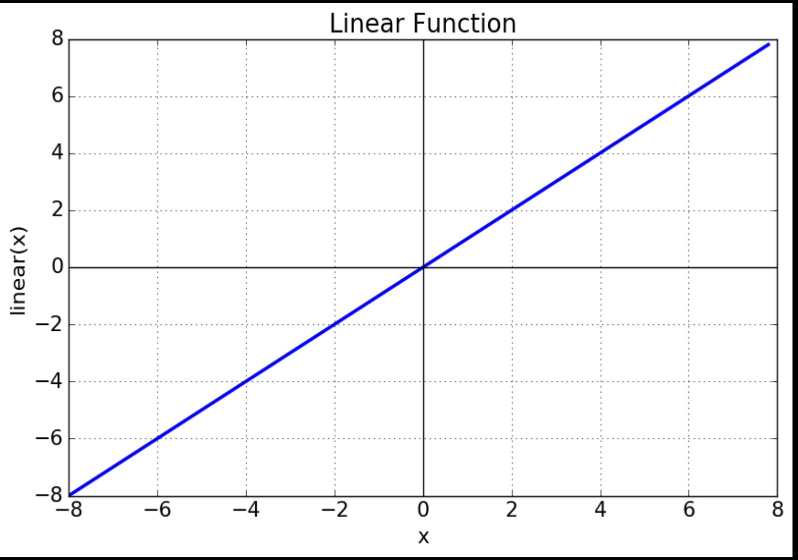
- continuous and infinite in domain,
- monotonic,
- nonlinear.



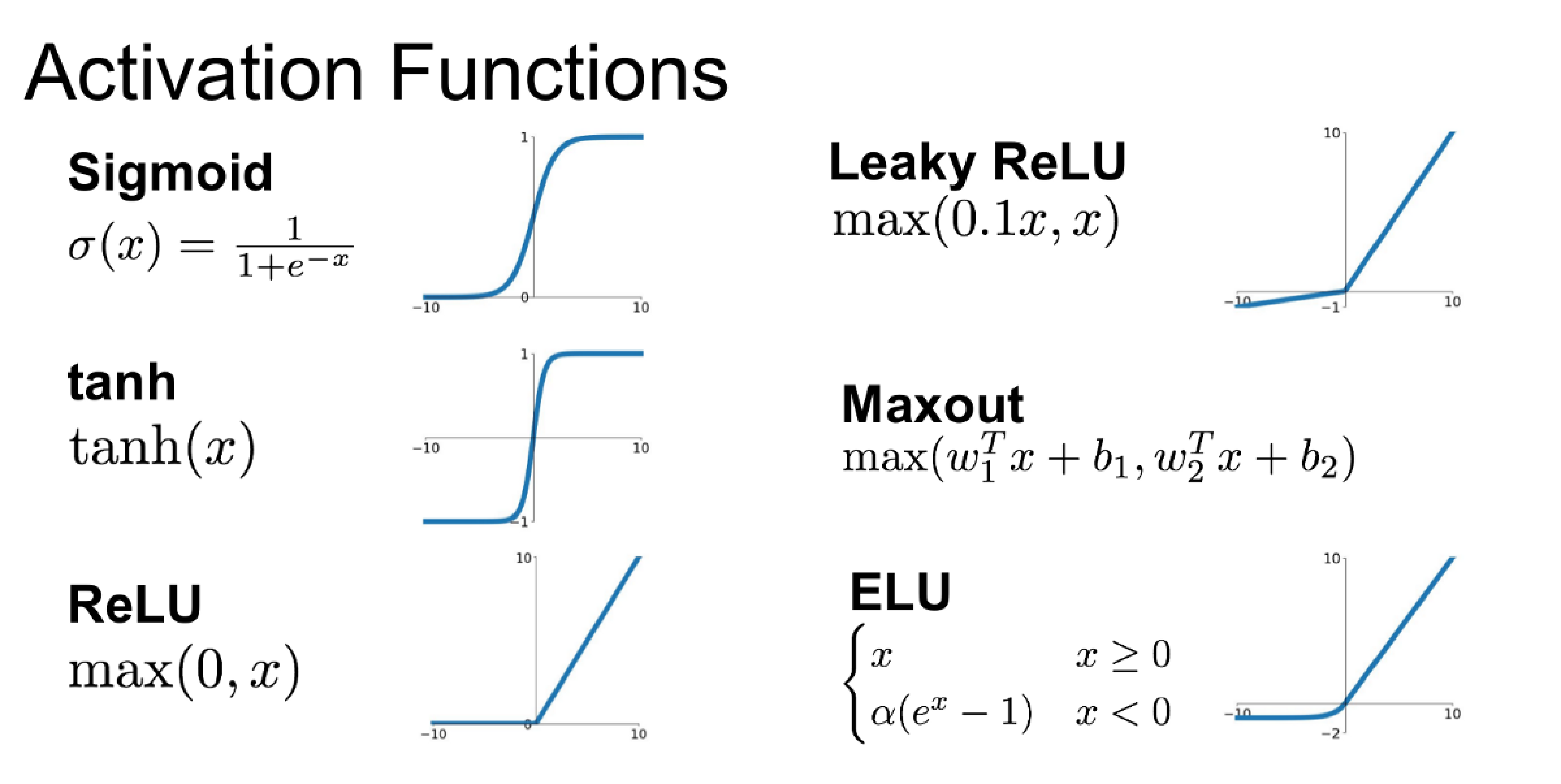
sigmoid

Linear Activation functions

- a neural network with only linear activations performs as well as a linear regression
- backpropagation cannot be applied to find how to change the neural weights based on the errors found: the gradient is a constant and do not depend on the input values



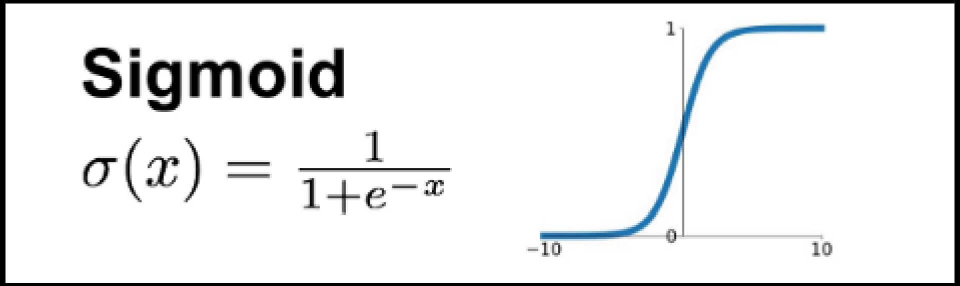
Activation functions



Sigmoid, Sofmax et ReLU

- smooth gradient, output values bound between 0 and 1.
- for high & low values of X, there is almost no change to the prediction, computationally expensive.

(softmax for multi classes)



- computationally efficient, allows the network to converge quickly.
- Pb of « dying » neuron if often <0