Sigmoid and Tanh Activation Functions

Sigmoid Activation Function

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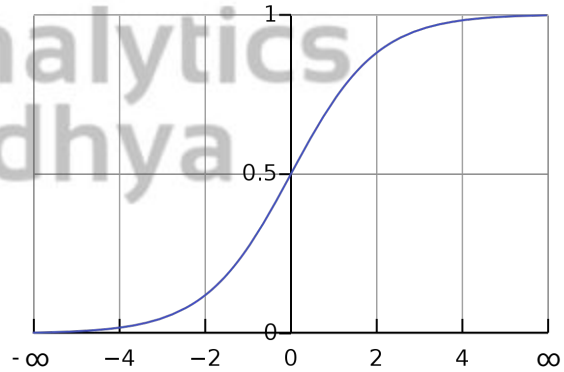
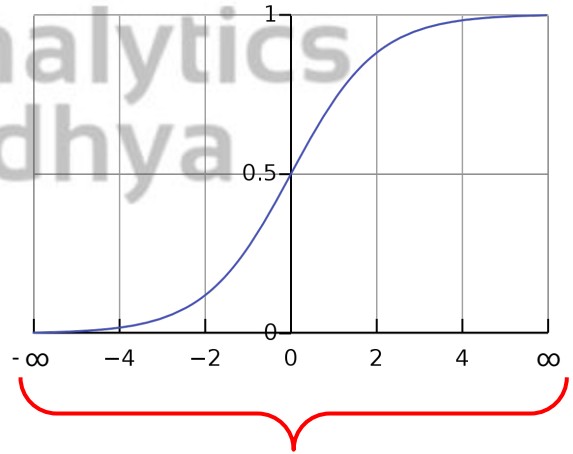
- Sigmoid Function Graph:



Sigmoid Activation Function

- Sigmoid Function Formula: $$\sigma(x) = \frac{1}{1+e^{-(x)}}$$
- Sigmoid Function Graph:
- Input Range: (- ∞ to ∞)



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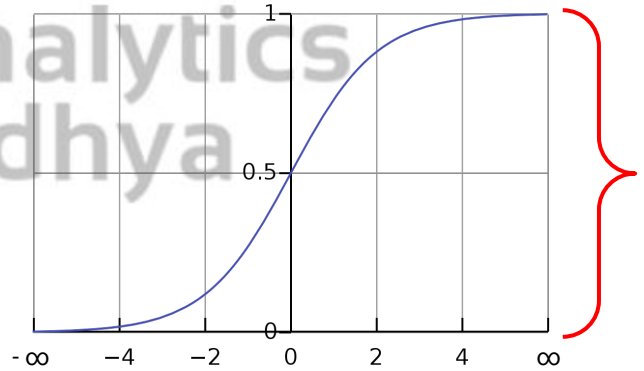

- Input Range: (- ∞ to ∞)
- Output Range: (0 to 1)

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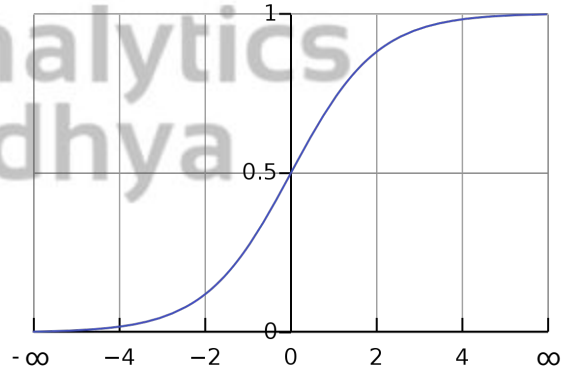
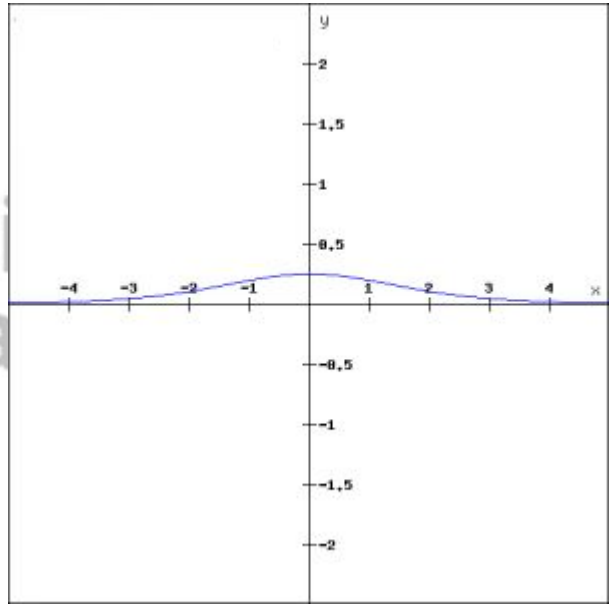


- Input Range: (- ∞ to ∞)
- Output Range: (0 to 1)
- Continuous and Differentiable

Sigmoid Activation Function Derivative

- Sigmoid Function:

$$\sigma(x) = \frac{1}{1+e^{-(x)}}$$



- Sigmoid Function derivative:

$$\frac{d\sigma}{dx} = \sigma(x)\,(1-\sigma(x))$$

Tanh Activation Function

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$$tanh(x) = 2\,\sigma(2x) - 1$$

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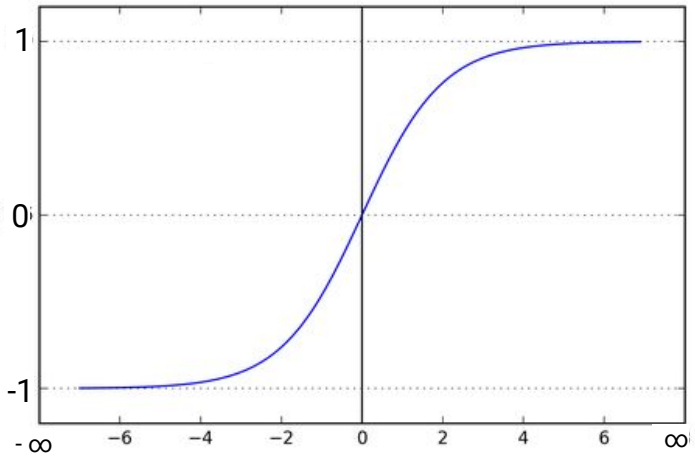
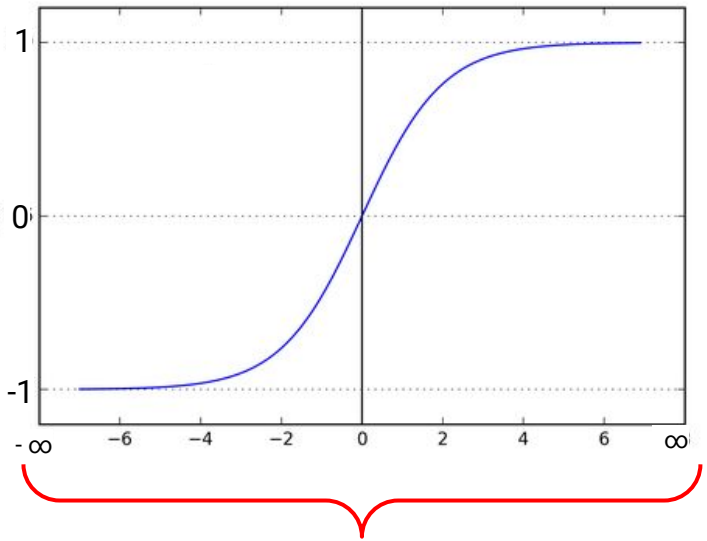
- Tanh Activation Function Graph:



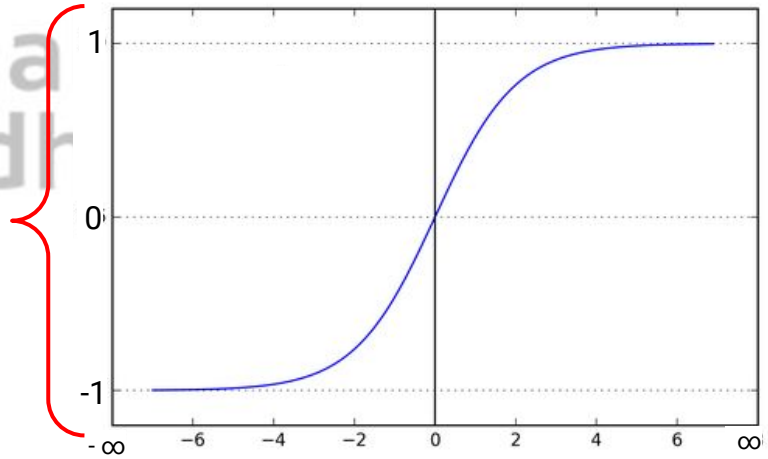
Tanh Activation Function

- Tanh Activation Function: $$tanh(x) = \frac{2}{1+e^{-2x}} - 1$$
- Tanh Activation Function Graph:
- Input Range: (- ∞ to ∞)

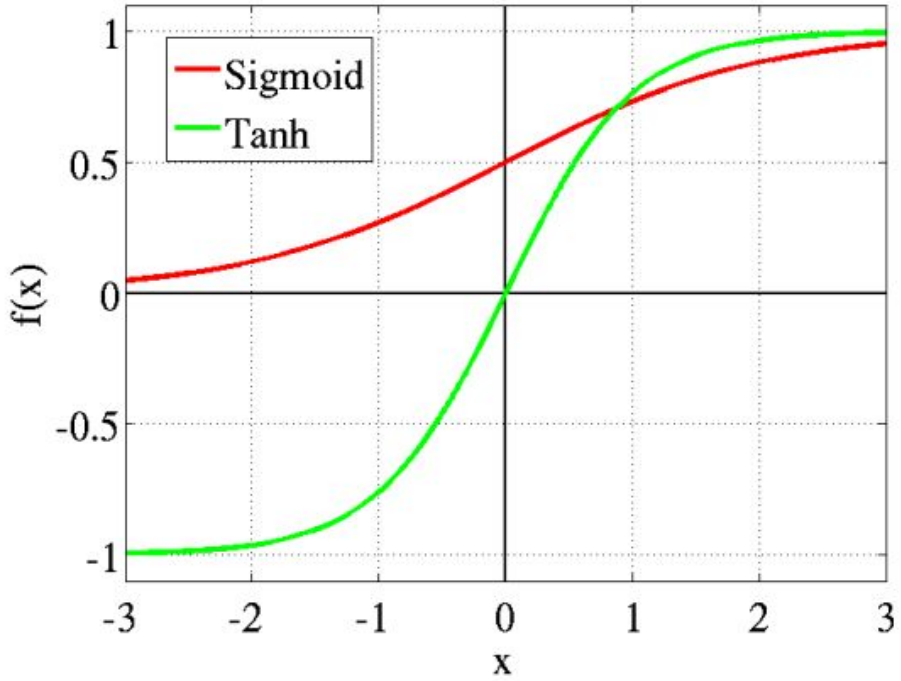


Tanh Activation Function

- Tanh Activation Function: $$tanh(x) = \frac{2}{1+e^{-2x}} - 1$$
- Tanh Activation Function Graph:
- Input Range: (- ∞ to ∞)
- Output Range: (-1 to 1)



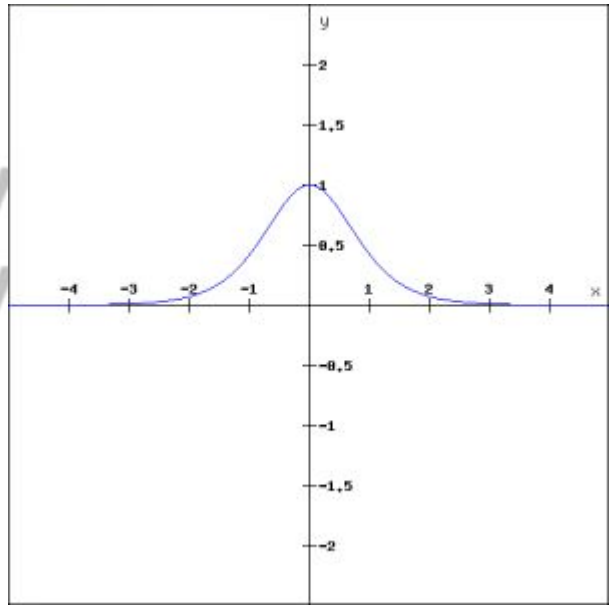
Sigmoid v/s Tanh Activation Function



Tanh Activation Function Derivative

- Tanh Activation Function:

$$tanh(x) = \frac{2}{1+e^{-2x}} - 1$$

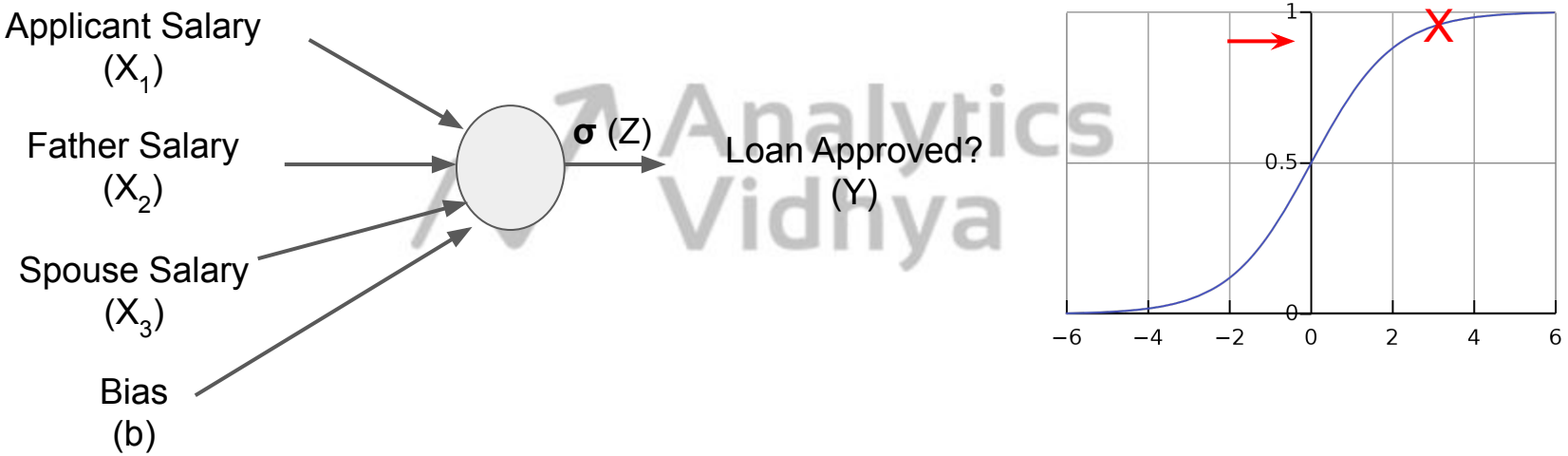


- Tanh Function derivative:

$$\frac{d\,tanh}{d\,x} = 1 - tanh^2(x)$$

Thank You

Sigmoid Activation Function



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