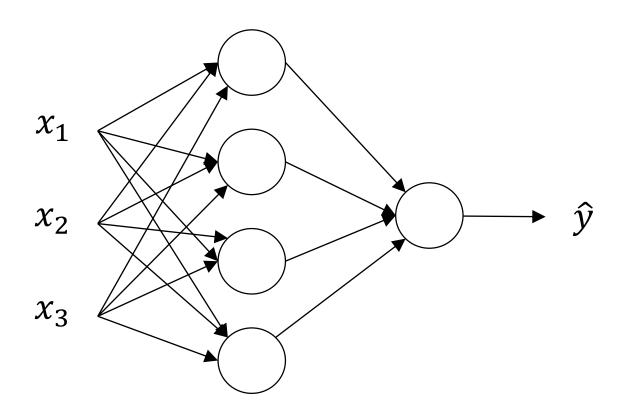


deeplearning.ai

# One hidden layer Neural Network

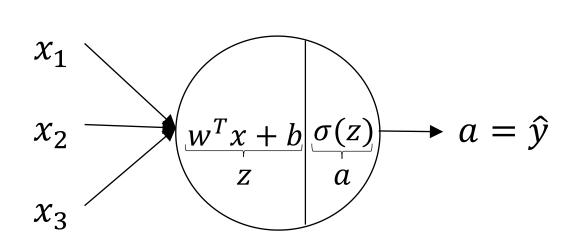


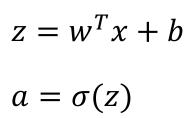


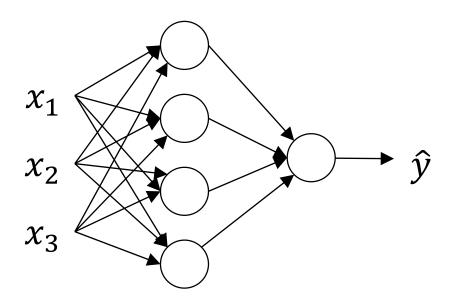
deeplearning.ai

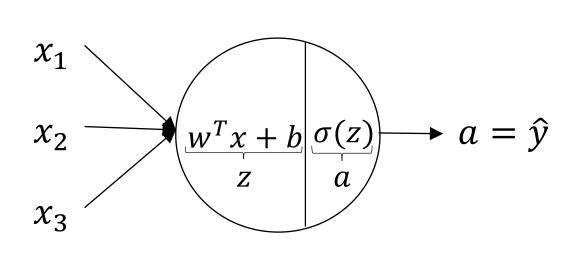
# One hidden layer Neural Network

Computing a Neural Network's Output



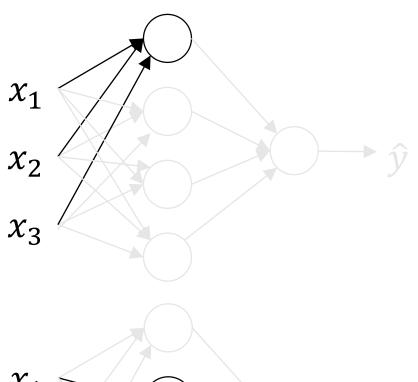


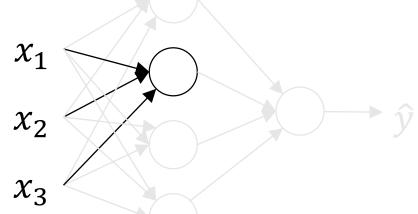


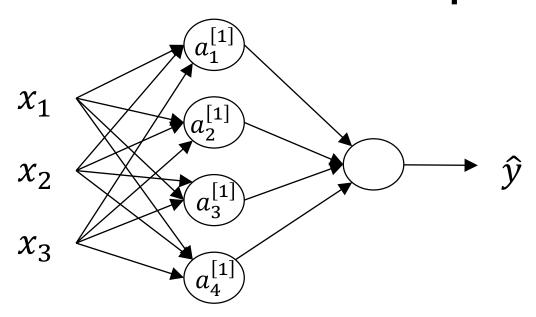


$$z = w^T x + b$$

$$a = \sigma(z)$$







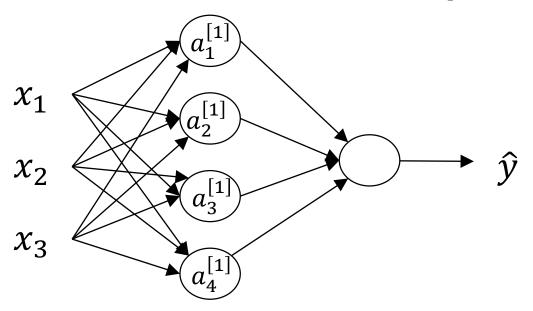
$$z_{1}^{[1]} = w_{1}^{[1]T} x + b_{1}^{[1]}, \ a_{1}^{[1]} = \sigma(z_{1}^{[1]})$$

$$z_{2}^{[1]} = w_{2}^{[1]T} x + b_{2}^{[1]}, \ a_{2}^{[1]} = \sigma(z_{2}^{[1]})$$

$$z_{3}^{[1]} = w_{3}^{[1]T} x + b_{3}^{[1]}, \ a_{3}^{[1]} = \sigma(z_{3}^{[1]})$$

$$z_{4}^{[1]} = w_{4}^{[1]T} x + b_{4}^{[1]}, \ a_{4}^{[1]} = \sigma(z_{4}^{[1]})$$

### Neural Network Representation learning



#### Given input x:

$$z^{[1]} = W^{[1]}x + b^{[1]}$$

$$a^{[1]} = \sigma(z^{[1]})$$

$$z^{[2]} = W^{[2]}a^{[1]} + b^{[2]}$$

$$a^{[2]} = \sigma(z^{[2]})$$