Interpretation of Hypothesis Output

$h_\theta(x)$ = estimated probability that $y = 1$ on output x

Eg) If $x = \begin{bmatrix} x_0 \\ x_1 \end{bmatrix} = \begin{bmatrix} 1 \\ \text{tumor size} \end{bmatrix}$

$h_\theta(x) = 0.7$ → probability of $y = 1$ for given x is 0.7

↳ Tell patient that 70% chance of tumor being malignant

$h_\theta(x) = P(y=1 \mid x; \theta)$ ⇒ "Probability that $y = 1$, given x, parameterized by θ"

$y = \begin{matrix} \nearrow 0 \\ \searrow 1 \end{matrix}$ } Possible outcomes

$\therefore P(y=1 \mid x; \theta) + P(y=0 \mid x; \theta) = 1$

$$P(y=0 \mid x; \theta) = 1 - P(y=1 \mid x; \theta) = 0.3$$

Tell the patient that 30% chance of tumor

OR

Probability of $y = 0$ for given x is 0.3