Problem 2

(b)

held out validation set V

$$V_+ = \{ x^{(i)} \in V \mid y^{(i)} = 1 \}$$

Assuming that $h(x^{(i)}) \approx p(y^{(i)} = 1 \mid x^{(i)})$

    show that $h(x^{(i)}) \approx \alpha$ for all $x^{(i)} \in V_+$

You may assume that $p(t^{(i)} = 1 \mid x^{(i)}) \approx 1$ when $x^{(i)} \in V_+$

$$\frac{p(y^{(i)} = 1 \mid x^{(i)})}{p(t^{(i)} = 1 \mid x^{(i)})} = \alpha$$

$$h(x^{(i)}) = p(y^{(i)} = 1 \mid x^{(i)}) \qquad \text{for all } x \in V_+$$

$$= \frac{p(y^{(i)} = 1 \mid x^{(i)})}{\boxed{p(t^{(i)} = 1 \mid x^{(i)})} \leftarrow 1}$$

$$= \alpha \quad \textcolor{red}{\checkmark}$$