A)

Since we assume $W = \begin{bmatrix} 0.7 \\ 0.1 \\ -0.1 \\ 0.9 \end{bmatrix} = \begin{bmatrix} \vec{W}_D \\ \vec{W}_{ND} \end{bmatrix}$

Without loss of generosity, assume $b = 0$

$$g(x^1, y^1; W) = W^T \cdot \begin{bmatrix} 1 \\ 1 \\ 0 \\ 0 \end{bmatrix} = 0.7 + 0.1 = 0.8$$

B) Two outputs are possible

$$g(x^1, y = dog; W) - g(x^1, y^1; W) + \Delta(y^1, y = dog) = \Delta(y^1, y = dog) = \Delta(1,1)$$

$$g(x^1, y = notdog; W) - g(x^1, y^1; W) + \Delta(y^1, y = notdog) =$$

$$= W^T \begin{bmatrix} 0 \\ 0 \\ 1 \\ 1 \end{bmatrix} - W^T \begin{bmatrix} 1 \\ 1 \\ 0 \\ 0 \end{bmatrix} + \Delta(y^1, y = notdog) = 0.8 - 0.8 + \Delta(1,0) = \Delta(1,0)$$

It depends on how we define $\Delta(y^i, y)$.

However, $\Delta(y^i, y)$ should satisfy

$$g(x^i, y^i; W) \geq g(x^i, y; W) + \Delta(y^i, y) \quad \forall y \in \mathcal{Y}$$

In the first example $g(x^1, y^1; W) = g(x^1, y; W)$ $\forall y \in \mathcal{Y}$

so $\Delta(y^1, y) = 0$. In this sense, either one can be the most violated.