Homework #2 CSE-107

1 b.-) continued...

$$\Rightarrow \frac{1}{(x_2-x_1)(y_2-y_1)}\begin{pmatrix} x_2-x_s & x_s-x_1 \end{pmatrix}\begin{pmatrix} p_1 & p_2 \\ p_3 & p_4 \end{pmatrix}\begin{pmatrix} y_2-y_s \\ y_s-y_1 \end{pmatrix}$$

$$f(x_s, y_s) = \frac{1}{(5-4)(11-10)}\begin{bmatrix} 5-4.3 & 4.3-4 \end{bmatrix}\begin{pmatrix} 100 & 107 \\ 120 & 130 \end{pmatrix}\begin{pmatrix} 11-10.4 \\ 10.4-10 \end{pmatrix}$$

$$= \frac{1}{(1)(1)}\begin{bmatrix} 0.7 & 0.3 \end{bmatrix}\begin{pmatrix} 100 & 107 \\ 120 & 130 \end{pmatrix}\begin{pmatrix} 0.6 \\ 0.4 \end{pmatrix}$$

$$\Rightarrow \begin{bmatrix} 0.7, 0.3 \end{bmatrix}\begin{pmatrix} 100\cdot 0.6 + 107\cdot 0.4 \\ 120\cdot 0.6 + 130\cdot 0.4 \end{pmatrix} \Rightarrow \begin{bmatrix} 0.7, 0.3 \end{bmatrix}\begin{pmatrix} 60+42.8 \\ 72+52 \end{pmatrix}$$

$$\Rightarrow \begin{bmatrix} 0.7 \cdot 0.3 \end{bmatrix}\begin{pmatrix} 102.8 \\ 124 \end{pmatrix} = 0.7\cdot 102.8 + 0.3\cdot 124 = 71.96 + 37.2$$

$$\boxed{= 109.16}$$

2; a) 4-adjacent

- not adjacent because q is not set $(N_4(p))$

b) 8-adjacent

- It is adjacent because q is the set $(N_8(p))$

c) m-adjacent

- It is adjacent because q is in the $(N_p(p))$ & $(N_4(p)) \cap (N_4(q))$ set is empty