

d.) After 5 iterations, w does not converge

Exercise 12.3.2

a) $\min \|w\|^2$

$$\text{s.t. } y_i(w \cdot x_i + b) \geq 1$$

$$w = [0, 0.5, 0.5], b = 3.5$$

Six points and the Classification plane.

$$\text{support vectors} = [3, 4, 5], [2, 7, 2], [3, 3, 2], [2, 4, 1]$$

Exercise 12.4.3

a.)

$$f(q) = \begin{cases} 1, & x \leq 1.5 \\ 2, & 1.5 < x \leq 3 \\ 3, & 3 < x \leq 6 \\ 4, & 6 < x \leq 12 \\ 5, & 12 < x \leq 24 \\ 6, & x > 24 \end{cases}$$

b.)

$$f(q) = \begin{cases} 1.5, & x \leq 2.5 \\ 2.5, & 2.5 < x \leq 5 \\ 3.5, & 5 < x \leq 10 \\ 4.5, & 10 < x \leq 20 \\ 5.5, & x > 20 \end{cases}$$