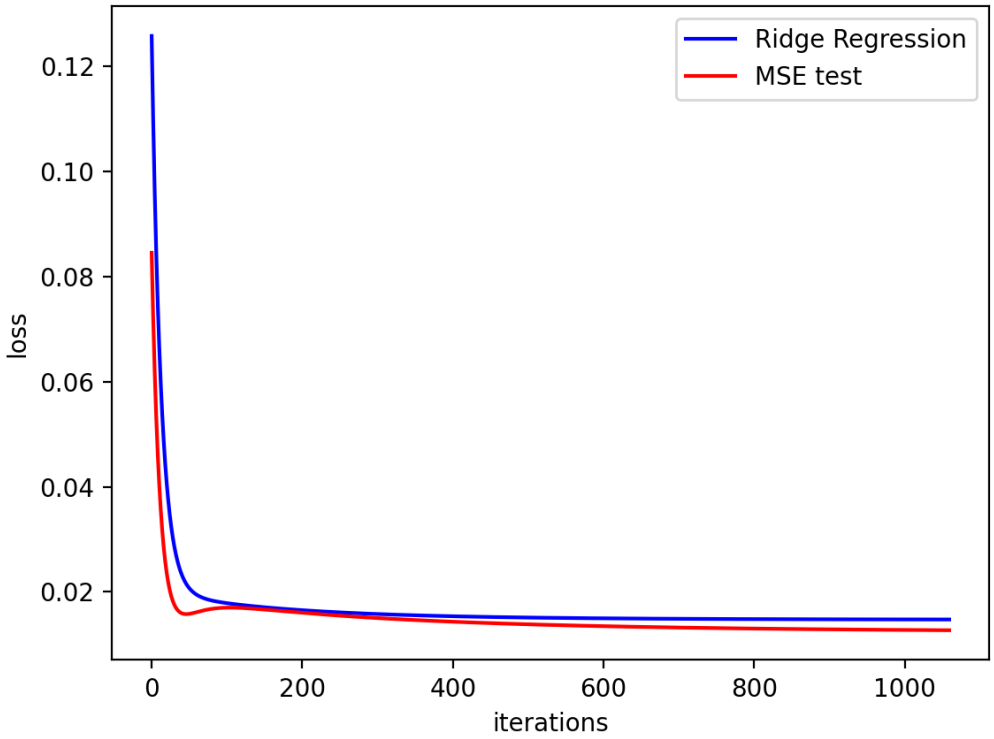
HW1

2.



The mean squared loss on the test data for Section 1.3 is 0.012718892609178573.

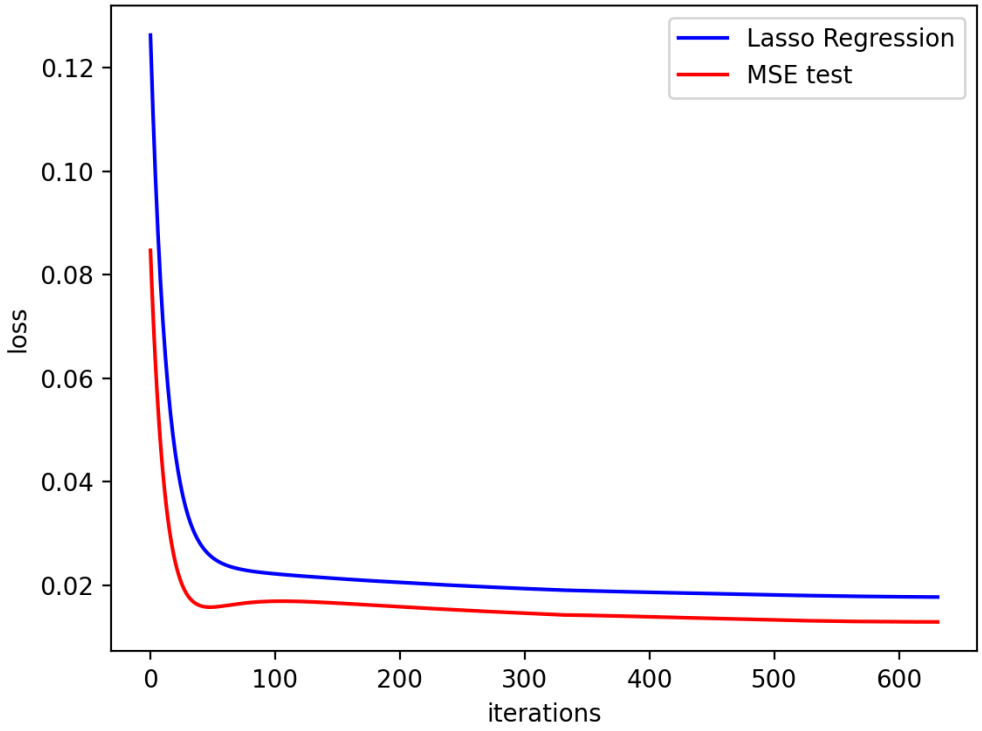
3. The number of elements in w whose absolute value is smaller than 0.01 for Section 1.3 is 2.

4.

$$J(w) = \frac{1}{2n}\sum_{i=1}^{n}(y_i - f(x_i))^2 + \frac{\lambda}{2(d+1)}\sum_{j=1}^{d+1}|w^j|$$

$$\frac{\partial J(w)}{\partial w^j} = \frac{1}{n}\sum_{i=1}^{n}(y_i - f(x_i))x_i^j + \begin{cases} \frac{\lambda}{2(d+1)}, & w^j \geq 0 \\ -\frac{\lambda}{2(d+1)}, & w^j < 0 \end{cases}$$

5.



The mean squared loss on the test data for Section 1.4 is 0.012902208569796306.

6. The number of elements in w whose absolute value is smaller than 0.01 for Section 1.4 is 6.