

Flip Robo

Machine Learning Worksheet - 1 Solutions

1. Correct option - A & Correct Answer - $O(n^{2.4})$
2. Correct option - C & Correct Answer - Polynomial Regression
3. Correct option - B & Correct Answer - Gradient Descent
4. Correct option - C & Correct Answer - Lasso
5. Correct option - C & Correct Answer - batch gradient descent
6. Correct option - B & Correct Answer - False
7. Correct option - C & Correct Answer - It does not matter whether half is there or not.
8. Correct option - B & Correct Answer - Correlation
9. Correct option - A, B & C & Correct Answer -
A) We don't have to choose the learning rate.
B) It becomes slow when number of features are very large.
C) We need to iterate.
10. Correct option - A & C & Correct Answer -
A) Linear Regression will have high bias and low variance.
C) Polynomial with degree 5 will have low bias and high variance.

11. Correct option - C, D & Correct Answer - It discovers casual relationships & No inference can be made from regression line.

12. We could use batch gradient descent, stochastic gradient descent, or mini-batch gradient descent. SGD and MBGD would work the best because neither of them need to load the entire dataset into memory in order to take 1 step of gradient descent. Batch would be ok with the caveat that you have enough memory to load all the data. The normal equations method would not be a good choice because it is computationally inefficient. The main cause of the computational complexity comes from inverse operation on an $(n \times n)$ matrix. $O(n^2 \cdot 4)$ to $O(n^3)$.

13. If the features in your training set have very different scales, the cost function will have the shape of an elongated bowl, so the Gradient Descent algorithms will take a long time to converge. To solve this you should scale the data before training the model. Note that the Normal Equation will work just fine without scaling