

Unit 1: Solutions

Question 1

Learning is the execution of a computer program to optimize the parameters of the model using the training data or past experience.

Question 2

In supervised learning, classification algorithms produce qualitative outputs while regression algorithms produce quantitative outputs.

Question 3

The aim of unsupervised learning is to find regularities in the input.

Question 4

The three core math competencies for machine learning and artificial intelligence research are:

- a. Linear Algebra, Logic, and Multivariate Calculus
- b. Probability Theory, Linear Algebra, and Multivariate Calculus**
- c. Geometry, Linear Algebra, and Statistics
- d. Statistics, Multivariate Calculus, and Probability Theory

Question 5

To assess your knowledge of linear algebra, solve the following matrix multiplication problem:

$$\begin{bmatrix} 1 & 3 \\ 4 & 2 \end{bmatrix} \begin{bmatrix} 3 & 2 \\ 5 & 3 \end{bmatrix} = \begin{bmatrix} 1 * 3 + 3 * 5 & 1 * 2 + 3 * 3 \\ 4 * 3 + 2 * 5 & 4 * 2 + 2 * 3 \end{bmatrix} = \begin{bmatrix} 18 & 11 \\ 22 & 14 \end{bmatrix}$$