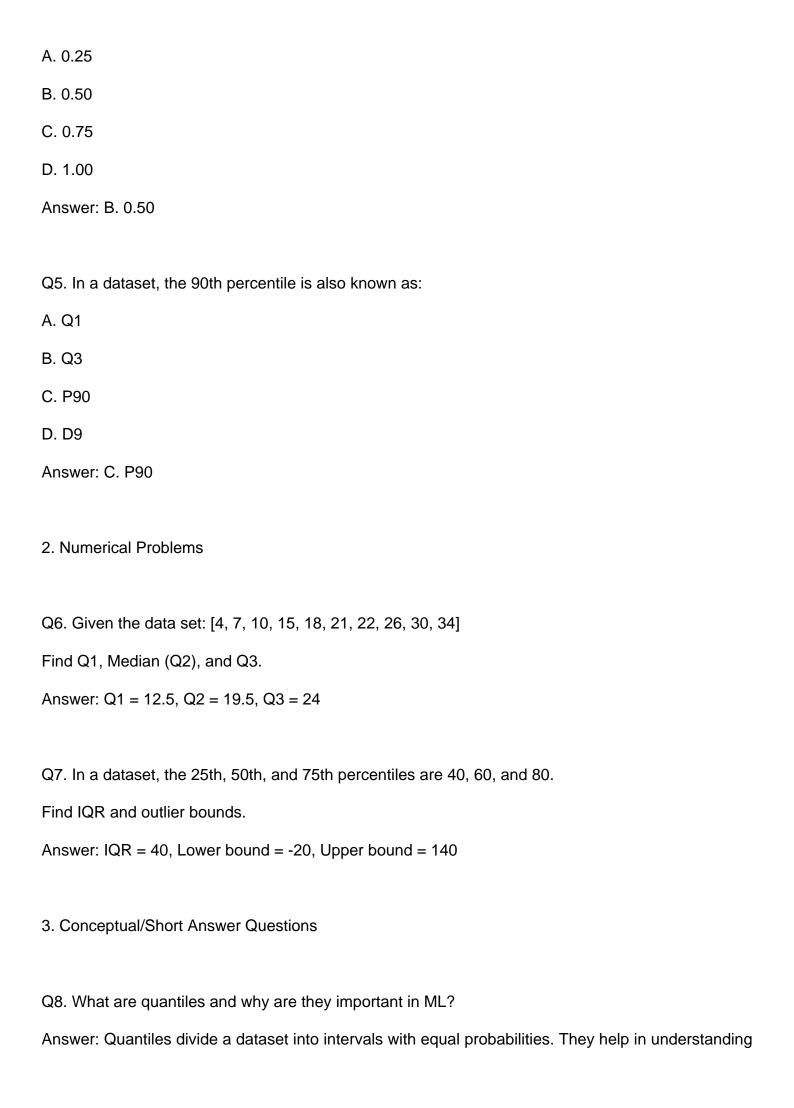
Practice Questions and Problems on Quantiles in Machine Learning

1. Multiple Choice Questions (MCQs)
Q1. What does the 0.75 quantile represent?
A. Median
B. First quartile
C. Third quartile
D. Mean
Answer: C. Third quartile
Q2. Which of the following is not true about quantiles?
A. They divide the data into intervals with equal probabilities.
B. They are affected by extreme values.
C. They help in detecting outliers.
D. Median is a type of quantile.
Answer: B. They are affected by extreme values.
Q3. Which of the following plots is most commonly used to visualize quantiles?
A. Histogram
B. Line plot
C. Box plot
D. Scatter plot
Answer: C. Box plot

Q4. Which quantile corresponds to the median?



data distribution, detecting outliers, normalizing features, etc.

Q9. How is quantile normalization useful?

Answer: It makes feature distributions uniform across samples, enhancing comparability and model performance.

Q10. Differentiate percentiles, deciles, and quartiles.

Answer: Percentiles = 100 parts, Deciles = 10 parts, Quartiles = 4 parts.

4. Advanced Application Problem

Q11. Quantile regression predicts house prices as: Q0.25 = \$120k, Q0.5 = \$150k, Q0.75 = \$180k. Interpret.

Answer: 25% of prices < \$120k, median = \$150k, 75% of prices < \$180k. This provides a range of predictions, not just a point estimate.