STA 3180 Statistical Modelling: Bootstrapping

1. What is bootstrapping and why is it used?

Answer: Bootstrapping is a statistical technique used to estimate the sampling distribution of an estimator by resampling a dataset with replacement. It is used to reduce the variance of an estimator, to provide confidence intervals for a statistic, and to test hypotheses.

2. What are the assumptions of bootstrapping?

Answer: The assumptions of bootstrapping are that the data is independent and identically distributed (i.e. the observations are independent and have the same distribution).

3. What is the difference between parametric and non-parametric bootstrapping?

Answer: Parametric bootstrapping assumes that the data follows a known probability distribution, while non-parametric bootstrapping does not make any assumptions about the underlying distribution of the data.

4. How is the bootstrap sample created?

Answer: The bootstrap sample is created by randomly sampling with replacement from the original dataset. This means that each observation can be selected multiple times in the sample.

5. What is the bootstrap percentile method?

Answer: The bootstrap percentile method is a method of constructing confidence intervals using the bootstrap sample. It involves calculating the percentiles of the bootstrap sample and using them to construct the confidence interval.

6. What is the bootstrap t-test?

Answer: The bootstrap t-test is a method of testing the difference between two means using the bootstrap sample. It involves calculating the t-statistic for the bootstrap sample and using it to test the null hypothesis.

7. What is the bootstrap bias correction?

Answer: The bootstrap bias correction is a method of correcting for bias in the bootstrap sample. It involves calculating the bias of the bootstrap sample and then subtracting it from the original sample.

8. What is the bootstrap standard error?

Answer: The bootstrap standard error is a measure of the variability of the bootstrap sample. It is calculated by taking the standard deviation of the bootstrap sample and dividing it by the square root of the number of observations in the sample.