MLAI Week 9 Exercise: Generative Models

Note: An indicative mark is in front of each question. The total mark is 7. You may mark your own work when we release the solutions.

[1] 1. Slide 19: if the observed data point is $(x = -0.9, y = -0.1)$ instead, sketch what the likelihood will look like.

[2] 2. Slide 20: if the second observed data point is $(x = -0.7, y = 0.8)$ instead, sketch what the posterior will look like on this slide, assuming the first observed data point is still as it is $(x = 0.9, y = 0.1)$.

[1] 3. Slide 26: What is/are the sufficient statistics for a Bernoulli distribution?

[3] 4. Slide 36: show how to obtain a variable z with a normal distribution of mean μ and standard deviation (std) σ from a standard normal distribution with a mean of zero and std of 1 and verify the mean and std of z are indeed μ and σ respectively.