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Examples of Maximum Likelihood Estimation, Part I - Quiz

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Question 1

1.0/1.0 point (graded)

For an i.i.d. random variable, the likelihood function is simply equal to: (Select all that apply)

- [x] a. The joint PDF of the data
- [ ] b. $\Pi_i f(\theta|x)$
- [x] c. $\Pi_i f(x|\theta)$
- [ ] d. $f(x|\theta)$
- [ ] e. $f(\theta|x)$

✔

Explanation

The likelihood function is a reinterpretation of the joint PDF of our data or random sample. The likelihood function is the same as the joint PDF of the data, which for i.i.d. random variables is equal to $\Pi_i f(x|\theta)$

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Question 2

1.0/1.0 point (graded)

Sometimes the likelihood function is computationally difficult to maximize. In this case, what could we maximize instead? (Select all that apply.)

- [x] a. The log of the likelihood function.
- [ ] b. The inverse of the likelihood function.
- [ ] c. The sine of the likelihood function.
- [x] d. Any monotonic transformation of the likelihood function.

✔

Explanation

Maximizing any monotonic transformation of the likelihood function will give us the same parameters as maximizing the original likelihood function. Taking the log is a monotonic transformation, so (a) is correct. In practice, we often maximize the log-likelihood rather than the likelihood because it is often

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computationally easier to maximize the log-likelihood.

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