

Homework 4 - MATH 141

Due Date: Friday 10/01/2021, 11:59 PM

Instructions:

- Please provide complete answers/solutions for each question/problem.
- If it involves mathematical computations, please provide your reasoning and/or detailed solutions.
- There are two ways you can write your answers, a: by handwriting (either physically or digitally), or b: by typing on a template document with file type options, Word or RMarkdown, which can be downloaded from the [course website](#).
- If you had handwritten your answers/solutions on a physical paper, make sure to label it properly and please scan your document using a scanner app for convenience. Suggestions: (1) “[Tiny Scanner](#)” for [Android](#) or (2) “[Scanner App](#)” for [iOS](#).
- If you have questions or concerns, please feel free to ask the instructor.
- **Please save your work as pdf file(s), don't put your name in any part of the document, and submit it to the Gradescope page for this course. Your document upload will correspond to your name automatically in Gradescope.**

I. Basic Probability Theory

1. [Multiple Choice] This mathematical theory guarantees that if repeated samples are taken a sample proportion or a difference in sample proportions will follow something that resembles a normal distribution.
 - (a) the law of large numbers
 - (b) the central limit theorem
 - (c) the theory of relativity
 - (d) the normal distribution theory

2. [Multiple Choice] A theorem that describes the result of performing the same trials multiple times. As more trials are performed, the mean of the results obtained tends to become closer to the expected value.
 - (a) the law of large numbers
 - (b) the central limit theorem
 - (c) the theory of relativity
 - (d) the normal distribution theory

II. Project Phase 1 & 2 Self-Assessment

Please use this form to provide an honest self-assessment of your contribution to your Group Project - Phase 1 & 2 Report. As with other work you submit for this course, your responses here should abide by the Reed College Honor Principle: https://www.reed.edu/honor_principle/. (These questions are borrowed from Prof. Wells.)

Completing this homework is necessary in order to receive individual credit for the group project.

1. State your group number.
2. In a short paragraph, describe the particular contributions that you made to Phase 2.
3. Do you feel that the workload for Phase 1 was shared equally among all group members? If not, please elaborate.
4. Do you feel that all group members met their obligations to the group for Phase 2 (e.g. completing designated tasks on-time, attending group meetings, responding promptly to messages / emails, demonstrating a cooperating attitude)? If not, please elaborate.
5. Select one of the following statements that you feel best describes your contributions to Phase 2.
 - (a) I contributed significantly more than an equal share. If the group submitted the assignment based on the work I alone contributed, the assignment would have been completed, although perhaps at a somewhat lower quality or with some missing components.
 - (b) I contributed somewhat more than an equal share. If everyone in the group contributed an amount similar to mine, the assignment would have been completed more quickly or at a higher quality than what was submitted.
 - (c) I contributed an equal share, and I believe others in the group did as well.
 - (d) I contributed an equal share, but I believe others in the group did not.
 - (e) I contributed somewhat less than an equal share. If everyone in the group contributed an amount similar to mine, the assignment would have been completed, but would be at a lower quality than what was submitted.
 - (f) I contributed significantly less than an equal share. If everyone in the group contributed an amount similar to mine, the assignment would not have been completed, or would have been completed but with several significant missing components.
6. Is there any other information that you would like to provide about the distribution of work for this assignment? (For example, if you contributed less than an equal share, is there a reason you would like to communicate for why this occurred?)