

## Math 121 Take-Home Quiz #2

Due Sunday, September 12, 2021 in Gradescope by 11:59 pm ET

Instructions:

- This is an Open Notes Quiz. You can use materials, homeworks problems, lecture notes, etc. that you manually worked on.
- This is **NOT** an Open Internet Quiz. You can only access our Main Course Webpage.
- You are not allowed to work on or discuss these problems with other students, professor, Math Fellow TA or simply put anyone.
- You can ask a few small, clarifying, questions in Office Hours, but the problems will not be solved for you.
- The main goal is to make a thoughtful and detailed presentation for the solutions. Submit a clear final draft. No mess please.
- Please submit your final work in Gradescope in the Quiz 2 entry.

1. [10 Points] Show that  $\int_2^{2\sqrt{3}} \frac{1}{\sqrt{16-x^2}} + \frac{1}{4+x^2} dx = \boxed{\frac{5\pi}{24}}$

2. [10 Points] Show that  $\int_{-\ln 2}^{-\ln(\frac{2}{\sqrt{3}})} \frac{e^x}{\sqrt{1-e^{2x}}} dx = \boxed{\frac{\pi}{6}}$

3. [10 Points] Compute  $\int \frac{x^2}{x^2+3} dx$