Please read the following instructions carefully:

- There are **three** problems.
- Each problem has **two** parts.
- **In each problem, solve any ONE part of your choice**.
- The point distribution is given in the table below.
- This is a group quiz. Feel free to discus the problems with your teammates. **You must, however, write and turn in your own work.**
- Upload your work to Gradescope.

Question:	1	2	3	Total
Points:	5	5	5	15

1. (5 points) Compute **ONE** of the two integrals:

$$\int x^2 \sin(x)\, dx \quad \textbf{OR} \quad \int \tan^3(x) \sec(x)\, dx$$

2. (5 points) Compute **ONE** of the two integrals:

$$\int \frac{1}{(1-x^2)^{3/2}}\, dx. \quad \textbf{OR} \quad \int \frac{5x}{(x-2)(x-3)}\, dx$$

3. (5 points) Solve any **ONE** of the following two parts:
   (a) Write an approximation using the trapezoidal rule for the integral,

$$\int_0^2 \ln(x^3)\, dx,$$

   using $n = 4$ sub-intervals. **Do NOT find the final numerical answer.**
   (b) Determine whether the following improper integral converges or diverges:

$$\int_1^\infty \frac{1}{x}\sqrt{1+\frac{1}{x}}\, dx.$$

Hint: Use the comparison property and recall that,

$$\int_1^\infty \frac{dx}{x^p} \text{ is finite if } p > 1 \text{ and } \int_1^\infty \frac{dx}{x^p} \text{ is infinite if } 0 < p \leq 1.$$

NOTE: Due to limited time available during the quiz, I have asked you to solve only a limited number of problems. But please try and solve all problems either during the quiz or after solving the required number of problems during the quiz. All such problems are fair game on the exam on Friday!