Read all problems carefully and **show your work**.

1. Compute the integral:
\[ \int_{-4}^{2} |x| + |x + 1| \, dx \]

2. Evaluate the following definite integrals:

   (a) \( \int_{1}^{6} x^2 + \frac{1}{x} \, dx \)

   (b) \( \int_{-\frac{\pi}{6}}^{\frac{\pi}{6}} \sin(x^3 + x^5) \, dx \)

   (c) \( \int_{0}^{1} \frac{x^3}{2 + 5x^4} \, dx \)

3. Evaluate the following indefinite integrals:

   (a) \( \int 4x^3 - x^5 + 7 \, dx \)

   (b) \( \int x \sin^3(2 + x^2) \cos(2 + x^2) \, dx \)

   (c) \( \int \frac{e^{2x}}{5 + e^{2x}} \, dx \)

4. Estimate the value of
\[ \int_{0}^{4} \frac{1}{1 + x} \, dx \]
using a **midpoint approximation** with 4 equal subintervals.

5. Explain why
\[ \int_{0}^{\pi} \frac{4}{(1 + \sin x)} \, dx > 6. \]
(If you need a calculator for this problem, you are doing it **wrong!**)