Problem Set #2

Due Thursday, February 5, 2026 @ 11:59 pm
Submit as a single pdf file to Canvas

Remember to review the Guidelines for Problem Sets in the Course Policies on the course webpage when writing up your solutions. A list of computations with no explanation is not acceptable for the Problem Sets. The general rule of thumb is that you should give enough explanation so that you could hand your assignment to a student who took Calc II last semester and they could follow your thought process.

1. Evaluate $\int \arcsin(x)\ dx$

   Verify your answer by taking the derivative. Show all steps in this process.

2. Evaluate $\int \cos(\sqrt{x})\ dx$

   Verify your answer by taking the derivative. Show all steps in this process.

3. Let $\mathcal{I} = \int_0^2 \sqrt{3x^2+1}\ dx$

   (a) Use WolframAlpha to calculate T_{10}, the trapezoid sum with 10 subdivisions for $\mathcal{I}$

   (b) Use Theorem 5.5.1, to determine the largest possible error $|\mathcal{I} - T_{10}|$.

4. Repeat problem #3, but use S_n, Simpson's rule, rather than the trapezoid sum to approximate $\mathcal{I}$