Problem Set #1

Due Thursday, January 29, 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. Find the derivative of $f(x) = \arctan(e^{3x})$

2. Find the equation of the line tangent to the graph of $y = f(x)$ at $x = \dfrac{1}{\sqrt{2}}$ where $f(x) = \arcsin(x)$.
   Include a graph of $y = f(x)$ and the tangent line on the same set of axes to verify your answer.

3. Evaluate $\displaystyle\int \frac{e^x}{\sqrt{1-e^{2x}}}\,dx$

4. Evaluate $\displaystyle\int_1^3 \frac{-x^3+6x-1}{1+(x^4-12x^2+4x+1)^2}\,dx$