In the problems below indicate your answers by drawing boxes around them. You must show your work to get credit for a problem. Final answers must be simplified.

1. Compute \( \int \sqrt{x(x + 1/x)} \, dx \).

2. Compute \( \int_{0}^{3} \frac{-3}{\sqrt[3]{(5 + 2x)^2}} \, dx \).
3. Compute \[ \int \frac{7}{10x^2 + 9} \, dx. \]

4. Compute \[ \int \frac{5}{\sqrt{9 - (2x - 1)^2}} \, dx. \]
5. Compute the slope of the tangent line to \( y = f(x) \) when \( x = 1 \) and \( f(x) = 5 \sin^{-1}(e^{-x}) \).

6. Compute \( \int \frac{3u - u^3}{u^4} \, du \)
7. Find the volume of a solid obtained by revolving around the x-axis the region bounded by \( y = x^2 \) and \( y = 1 \). Sketch the region in the plane.
8. Find the area under the curve $y = xe^x$ between $x = 0$ and $x = 4$. 