Instructions. Put your first and last name at the top of your paper. Everyone is to do their own worksheet but only one from each group is graded with the score shared. Be sure to show your work and explain your reasoning. All worksheets from each group will be collected.

1. Find $\frac{dy}{dx}$ and $\frac{dx}{dy}$ using implicit differentiation for the following curve:

$$\arctan(x + y) = x + y^3$$

2. Find the tangent line to the hyperbola $x^2 + 2xy - y^2 + x = 2$ at the point $(1, 2)$. Give your answer in $y = mx + b$ form.
3. Find \( f'(x) \) for \( f(x) = \ln(x + \sqrt{x^2 - 1}) \)

4. Find \( f'(x) \) for \( f(x) = x \cos(x) \).