

Name: _____

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Please circle your instructor's name:

James Gossell

Gordon Williams

There are 25 points possible on this quiz. Any outside materials are not allowed. **For full credit, show all work clearly.**

1. [15 points] Find the derivative of each function below. You do not need to simplify your answer.

a. $f(x) = \sqrt{\tan^{-1}x}$

b. $g(\theta) = \sin^{-1}(\theta) - (\sin(\theta))^{-1}$

c. $h(t) = \arccos(t \ln t)$

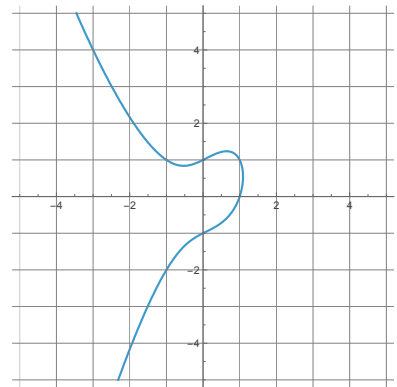
d. $j(x) = \frac{\arcsin(x^2)}{e^{2x} + 1}$

e. $k(t) = \ln(2x^2 + 3x) + e^{3x^2 - x} + e^{\ln \pi}$

2. [4 points] Use **logarithmic differentiation** to find the derivative of the function $f(x) = \sin x^{\tan x}$.

3. [6 points] The graph of $xy = x^3 + y^2 - 1$ is given at right.

a. Calculate $\frac{dy}{dx}$.



b. Use $\frac{dy}{dx}$ to find the **equation** of the tangent line to the curve at the point $(-1, -2)$. **Simplify** your answer.