

Name: KEY

Show all work, clearly and legibly, to receive full credit. Correct spelling, organization of your solution, and proper use of mathematical notation all count. YOU MAY NOT USE A CALCULATOR ON THIS QUIZ. No notes, books, or other additional resources are permitted. Good luck!

1.) (4 pts.) Compute $f'(x)$ if $f(x) = \sqrt{1+x^2}$.

$$f'(x) = \frac{1}{2} (1+x^2)^{-\frac{1}{2}} (2x)$$

2.) (4 pts.) Compute the derivative of both sides of the expression

$$x \sin y = \ln(\ln y).$$

Do not go further. In particular, do not solve for $\frac{dy}{dx}$.

$$(\sin y)(1) + (x) \left(\cos y \cdot \frac{dy}{dx} \right) = \frac{1}{\ln y} \cdot \frac{1}{y} \cdot \frac{dy}{dx}$$

3.) (2 pts.) What is $\cos \frac{\pi}{6}$? (Your answer should be a number.)

$$\frac{\sqrt{3}}{2}$$