MAT 136 (Calculus I), Prof. Jim Swift
In-Class Worksheet: Derivative of logs, and implicit differentiation

1. Find the derivative of these functions:

$f(x) = \ln(3x + 2)$

$g(x) = \ln|3x^2 - 2x - 1|$

$h(x) = \ln\left(\sqrt{\frac{|x|}{x^2+1}}\right)$. (Hint: Use logarithm identities to rewrite h, then differentiate.)

2. Consider the curve in the x-y plane that satisfies $\sin(x) + \sin(xy) + y^2 = 1$. Do implicit differentiation and solve for $\frac{dy}{dx}$.