Worksheet # 6 **Name:** _____
Date: 13/10/2021
Math 1A: Fall 2021

Problem 1

Differentiate the following

1. $f(x) = x\ln(x) - x$
2. $f(x) = \sin(\ln(x))$
3. $g(y) = \ln(ye^{-2y})$
4. $f(x) = \tan(\ln(ax + b))$

Problem 2

Find the following derivatives

1. $y = (x^2 + 2)^2(x^4 + 4)^4$
2. $y = \sqrt{\frac{x-1}{x^4+1}}$
3. $y = (\ln x)^{\cos(x)}$
4. $x^y = y^x$

Problem 3

1. Find $\frac{d}{dx^9}(x^8 \ln x)$
2. Find a formula for $f^{(n)}$ if $f(x) = \ln(x - 1)$ where $f^{(n)}$ is the n-th derivative of f.