MATH 1850
Elise Askelsen
March 8, 2022

Name: _____
Section: _____

Chain Rule and Implicit Differentiation Worksheet:

The purpose of this worksheet is to give you extra practice using the chain rule and implicit differentiation.

Find the derivatives of the following functions.

1. $y = \sqrt[3]{e^x + 1}$

2. $y = e^{sec(x)} - cos(2x)$

3. $J(\theta) = sin^2(n\theta)$

4. $y = (\frac{x^3}{(x-1)})^3$

5. $f(x) = ln(x^2 + 3x + 5)$

6. $g(x) = ln(x^2 e^{-x})$

7. $h(x) = x^2 e^{ln(tan(x))}$

8. $g(x) = e^{7x} + ln(sin(x))$

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Use Implicit Differentiation to find $\frac{dy}{dx}$ for the following functions.

a. $xy = \sqrt{x^2 + y^2}$

b. $2xe^y = 3ye^x$

c. $ye^{sin(x)} = \frac{x}{y}$

d. $cos(x)sin(y) = cos(x + y)$

Challenge: Find an equation for the tangent line for the equation $x^2 - xy - y^2 = 1$ at the point $(2, 1)$.