MATH 100, Tutorial 8
(Week of March 11, 2024)

Exercise 1. *Find $f'(x)$ for the following functions:*

(a) $f(x) = \dfrac{e^x - e^{-x}}{e^x + e^{-x}}$.

(b) $f(x) = e^x \ln x$.

(c) $f(x) = \dfrac{e^{-x}}{x}$.

(d) $f(x) = \sqrt{e^{3x} + 4x}$.

(e) $f(x) = x^{\pi}.\pi^x$

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

(g) $f(x) = 3^{\sin 3x}$.

(h) $f(x) = 3^{9x} + 9x^2$.

(i) $f(x) = \log_7(6x^4 + 3)^5$.

Exercise 2. *Use logarithmic differentiation to find y' (that is $\dfrac{dy}{dx}$).*

(a) $y = (\cos 2x)^{4x}$.

(b) $y = (2x)^{\sqrt{2x}}$.

(c) $y = (\ln x)^{\ln x}$.

(d) $y = (x^3 - 1)^{\ln x}$.

(e) $y = x^{-1/2}(x^2 + 5)^{2/3}(2x - 3)^5$.