MEMORIAL UNIVERSITY OF NEWFOUNDLAND

DEPARTMENT OF MATHEMATICS AND STATISTICS

SECTION 3.4 **Math 1000 Worksheet** FALL 2024

For practice only. Not to be submitted.

1. Differentiate each of the following.

   (a) $f(x) = 2^{\ln(x)}$

   (b) $y = \log_3(7x^5)$

   (c) $y = \ln\left(\dfrac{5}{x^7}\right)$

   (d) $g(x) = \ln\left(\dfrac{x^2-6}{x^2+4}\right)$

2. Use logarithmic differentiation to find $\dfrac{dy}{dx}$, given

   (a) $y = \dfrac{x^{3x}(2-x)^4}{(5x^5+1)\sqrt[3]{\csc^2(x)}}$

   (b) $y = \dfrac{\sqrt{x^2+1}}{(3x+2)[\tan(x)]^x}$