MEMORIAL UNIVERSITY OF NEWFOUNDLAND DEPARTMENT OF MATHEMATICS AND STATISTICS

Assignment 7

MATHEMATICS 1000

 $Fall \ 2024$

Due: Friday, November 15th, 2024 at 11:59pm. See the Gradescope Handout for submission information.

Note: You should complete the WeBWorK problem sets "Derivatives of Logarithmic Functions" and "Inverse Trigonometric Functions" as well as Worksheets 3.4, 3.5 and 3.6, before you work on this assignment.

1. Differentiate each of the following functions.

(a)
$$f(x) = \ln\left(\frac{\sqrt[3]{x}\csc^5(x)}{(3x-1)^7}\right)$$

(b)
$$y = [\sec(x)]^{x-9}$$

(c)
$$y = \cos(\cosh(\arccos(x)))$$

2. Find the equation of the tangent and normal lines to the curve $y = \arctan\left(\frac{1}{\ln(x)}\right)$ at the point x = e.