TEST 3:

HW:

MAPLE Assignment

The Final Grade for TEST 3:

I. (15%) Find the equation of the tangent line to the curve

\[ y = 2 \sin(\pi x - y) \]

at the point \((1, 0)\).
II. (15%) Find the derivative of the function:

\[ f(x) = \sin^{-1} x + \tan^{-1} x \]
III. (15%) Find the derivative of the function:

\[ f(x) = x \ln(x^2 + 1). \]

IV. (15%) Represent number \( e \) as a limit.
V. (15%) Let

\[ y(x) = x^3 + 2x + 3. \]

a) Find the differential \( dy \).
b) Evaluate \( dy \) and \( \Delta y \) given that \( x = 2 \) and \( dx = \Delta x = 0.1 \).
c) Sketch a diagram showing the line segments with lengths \( dx \), \( dy \), and \( \Delta y \)
VI. (15%) Find the absolute maximum and absolute minimum values of the function

\[ f(x) = x + 2 \sin x \]

on the interval \([-\pi, \pi]\).
VII. (10%) Find the critical points of the function

\[ f(x) = x^{1/3}(4 - x) \]