AP CALCULUS AB   Homework 0402   Name:
DR. PAUL L. BAILEY   Wednesday, April 2, 2025

Due Thursday, April 3, 2025.
Use your graphing calculator to accomplish the following.

Problem 1. Let $f(x) = \dfrac{5e^{\sqrt{x}}}{1 + x^2}$.

(a) Find the equation of the line tangent to the graph of f at the point $f(5, f(5))$.

(b) Find the average rate of change of f on the interval $[0, 10]$.

(c) Find the average value of f on the interval $[0, 10]$.

(d) Find the preimage $f^{-1}(5)$; that is, solve the equation $f(x) = 5$.

Problem 2. Let $f(x) = e^{\arctan(x)} + \ln(x^2 + 1)$.

(a) Find the equation of the line tangent to the graph of f at the point $f(5, f(5))$.

(b) Find the average rate of change of f on the interval $[0, 10]$.

(c) Find the average value of f on the interval $[0, 10]$.

(d) Find the preimage $f^{-1}(5)$; that is, solve the equation $f(x) = 5$.