AMS 151-Midterm 1-Fall 2024-Monday Lecture

Name:

1. Find $\frac{dy}{dx}$ if $y = lnx\sqrt{cosx}$.

2. Find $\frac{dy}{dx}$ if $y = \frac{8}{\sqrt[3]{x}} - 2e^x$.

3. Find $\frac{dy}{dx}$ if $y = \frac{(1-x)}{arctanx}$.

4. Find $\frac{dy}{dx}$ if $y = ln\sqrt{cosx}$.

5. Find $\frac{dy}{dx}$ if $y = \sin(e^{7x} + x)$.

6. A closed rectangular container with a square base is to have a volume of 2000 cubic centimeters. It costs twice as much per square centimeter for the top and bottom as it does for the sides. Find the dimensions of the container of least cost.

7. Use critical points and the first derivative test to graph $f(x) = x^3 - 12x - 5$. (Exact x intercepts are not required.)