Project #5
ENGR 2450

Title: Numerical Differentiation

1. Use calculus to analytically determine the first two derivatives of the function $f(x) = \cos(x) \cdot e^{-2x}$.
2. Use the algorithms on pages 271 & 272 to determine the first two derivatives of $f(x)$ for $x = [-1, 0, 1, 2]$ using $h = [0.1, 0.01, 0.001]$. In each case use both the formula with the largest error and the formula with the smallest error.
3. Compare the analytic derivatives with the numerical derivatives.

This is due on 4 March 2011.