

Lab 2 Practice

MATH 242

September 10, 2013

Use Mathematica to:

1. Calculate $\lim_{x \rightarrow 0} \frac{\sin(x)}{x}$.
2. Compute the fourth derivative of $\frac{x^2 e^{\tan(x)}}{\sin(x)}$ and numerically evaluate your answer at $x = 7$.
3. Define the function

$$f(t) = (t^3 + 3t - 7) \cos(t) + 35 \ln(t^2).$$

Calculate $\frac{df}{dt}$ and $\int_3^6 f(t) dt$ without retyping the function.

4. Plot the graphs of

$$g(x) = \frac{t^2 + 5t}{7} \quad \text{and} \quad h(x) = 3t^3 - t$$

over the interval $[-2, 2]$ on the same figure. Find the coordinates of their intersection (*Hint: there are three points of intersection*).