MA1125 – Calculus
Homework #4
due Thursday, Oct. 11

1. Compute the derivative $y' = \frac{dy}{dx}$ in each of the following cases.

$$y = \tan(e^x) + e^{\sec x}, \qquad y = \cos(\sin^2(\ln x)).$$

2. Compute the derivative $y' = \frac{dy}{dx}$ in the case that $y^2 \sin x + x^2 \sin y = x^2 y$.

3. Compute the derivative $y' = \frac{dy}{dx}$ in each of the following cases.

$$y = e^{\sin x} \cdot \cos(e^x), \qquad y = (x \cdot \tan x)^{\ln x}.$$

4. Compute the derivative $f'(x_0)$ in the case that

$$f(x) = \frac{(x^2+3)^2 \cdot x^{\ln x} \cdot e^{4-4x}}{\sqrt{e^{2x-2}+3}}, \qquad x_0 = 1.$$

5. Compute the derivative $y' = \frac{dy}{dx}$ in the case that

$$y = \tan^{-1} u, \qquad u = \sqrt{2z^3+1}, \qquad z = \frac{x^2-3}{x^2+1}.$$

- This assignment is due by Thursday noon, either in class or else in my office.
- Write your name and course (Maths, TP, TSM) on the first page of your homework.
- NO LATE HOMEWORK WILL BE ACCEPTED.