MA1125 – Calculus
Homework #2
due Thursday, Sep. 27

1. Determine the inverse function f^{-1} in each of the following cases.

$$f(x) = 3 - \log_2(2x - 4), \qquad f(x) = \frac{2 \cdot 7^x + 3}{5 \cdot 7^x + 4}.$$

2. Simplify each of the following expressions.

$$\cos\left(\tan^{-1} x\right), \qquad \sin\left(\cos^{-1} x\right), \qquad \log_2 \frac{4^x + 8^x}{2^x + 4^x}.$$

3. Use the ε-δ definition of limits to compute $\lim_{x\to 2} f(x)$ in the case that

$$f(x) = \left\{ \begin{array}{ll} 2x - 5 & \text{if } x \leq 2 \\ 5 - 3x & \text{if } x > 2 \end{array} \right\}.$$

4. Compute each of the following limits.

$$L = \lim_{x\to 1} \frac{x^3 - 4x^2 + 4x - 1}{x - 1}, \qquad M = \lim_{x\to 1} \frac{3x^3 - 7x^2 + 5x - 1}{(x - 1)^2}.$$

5. Use the ε-δ definition of limits to compute $\lim_{x\to 3}(5x^2 - 6x + 3)$.

- 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.