Math 1001 Section 1 (Margo) Assignment #2 Due Sept 25

Remarks on Problem 3 and its *typical* solution given in the answer page.

3. Rewrite the limit as a definite integral and evaluate:

$$\lim_{\|\Delta\|\to 0} \sum_{i=1}^n (\sec^2(2c_i)) \,\Delta x_i,$$

where c_i is a point from the interval Δx_i (i = 1, 2, ..., n) of the partition of the segment $[\pi/6, \pi/3]$.

Solution: The function $f(x) = \sec^2(2x)$ is not continuous on the segment $[\pi/6, \pi/3]$. This is the cause of the nonsense that the area bounded by a positive function $f(x) = \sec^2(2x)$ is negative $-\sqrt{3}$.

An answer to this question is: we can't apply FTC because given function is discontinuous at $x = \pi/4$. Note that if the interval was e.g. $[\pi/12, \pi/6]$ you could have proceed as it is stated in the solution.