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:

$$
\lim _{\|\Delta\| \rightarrow 0} \sum_{i=1}^{n}\left(\sec ^{2}\left(2 c_{i}\right)\right) \triangle x_{i},
$$

where $c_{i}$ is a point from the interval $\triangle x_{i}(i=1,2, \ldots, n)$ of the partition of the segment $[\pi / 6, \pi / 3]$.

Solution: The function $f(x)=\sec ^{2}(2 x)$ 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 $f(x)=\sec ^{2}(2 x)$ 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.

