

ASSIGNMENT 12

MTH101 (2014)

- (1) Let $f : [a, b] \rightarrow \mathbb{R}$ be a bounded function. Let P be a partition of $[a, b]$. Define the lower sum $L(f, p)$ and upper sum $U(f, P)$ of f for this partition P . Define what it means for f to be integrable.
- (2) Give an example of a function which is not integrable.
- (3) State the first fundamental theorem of calculus. Use it to calculate the following
 - (a) $\int_0^1 x^2 dx$.
 - (b) $\int_{-1}^{+1} \cos x dx$.
 - (c) $\int_0^1 e^x dx$.
 - (d) $\int_0^1 \left(\frac{1}{\sqrt{x}} + 1\right) dx$.