ASSIGNMENT-3

M.Sc.(Maths) 2ⁿᵈ Semester

Subject-Measure Theory and Integration

Give an Example of a continuous function which is not of bounded variation. Justify your answer?

1. Prove that a monotonic function on $[a,b]$ is of bounded variation.

2. Let g be defined by $g(0) = 0$ and $g(x) = x^2 \sin \dfrac{1}{x}$ for $x \neq 0$. Is g of bounded variation on $[-1,1]$.

3. If f is a bounded and measureable function defined on $[a,b]$ and $F(x) = \displaystyle\int_a^x f(t)dt + F(a)$ then $F^{'}(x) = f(x)$ a. e. in $[a,b]$.

4. Define absolutely continuous function and prove that if f is absolutely continuous on $[a,b]$ then f is of bounded variation on $[a,b]$.

5. State and prove Lebesgue Theorem.