

Course outline

How does an NPTEL online course work?

Week 0

Week 1

Week 2

Week 3

Week 4

Week 5

Week 6

Week 7

Week 8

Week 9

● 25.1 The Riemann integral revisited

● 25.2 Monotone sequences of functions

● 26.1 Upper functions and their integrals

● 26.2 Riemann integrable functions as upper functions

● 27.1 Lebesgue integrable functions

● 27.2 Approximation of Lebesgue integrable functions

○ Quiz: Week 9: Assignment 9

● Week 9 Feedback Form: Real Analysis II

Week 10

Week 11

Week 12

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Week 9: Assignment 9

The due date for submitting this assignment has passed.

Due on 2021-09-29, 23:59 IST.

As per our records you have not submitted this assignment.

1) Which of these are true about limits of step functions on the interval $[a, b]$, $a, b \in \mathbb{R}$?

3 points

Any continuous function on $[a, b]$ is a uniform limit of step functions.

Any differentiable function on $[a, b]$ is a uniform limit of step functions.

Any continuous function on $[a, b]$ is a pointwise limit of step functions.

Any function that is continuous outside a finite set of $[a, b]$ is a uniform limit of step functions.

No, the answer is incorrect.

Score: 0

Accepted Answers:

Any continuous function on $[a, b]$ is a uniform limit of step functions.

Any differentiable function on $[a, b]$ is a uniform limit of step functions.

Any continuous function on $[a, b]$ is a pointwise limit of step functions.

2) Let I be an unbounded interval and $f : I \rightarrow \mathbb{R}$ be a function.

3 points

If $f \geq 1$ a.e. then f cannot be Lebesgue integrable

If $f|_{([-n,n] \cap I)}$ is in $L([-n, n] \cap I)$ for each $n \in \mathbb{N}$ then $f \in L(I)$.

If $f \in L(I)$ then $f|_{([-n,n] \cap I)}$ is in $L([-n, n] \cap I)$ for each $n \in \mathbb{N}$

If f is Lebesgue integrable then so is $|f|$.

No, the answer is incorrect.

Score: 0

Accepted Answers:

If $f \geq 1$ a.e. then f cannot be Lebesgue integrable

If $f \in L(I)$ then $f|_{([-n,n] \cap I)}$ is in $L([-n, n] \cap I)$ for each $n \in \mathbb{N}$

If f is Lebesgue integrable then so is $|f|$.

3) Let $f, g : I \rightarrow \mathbb{R}$ be functions such that $f = g$ a. e. . Then

2 points

If f is Lebesgue integrable then so is g but the integrals need not coincide.

If f is an upper function then so is g .

If f is Riemann integrable then so is g .

Either f and g are both Lebesgue integrable or neither are Lebesgue integrable.

No, the answer is incorrect.

Score: 0

Accepted Answers:

If f is an upper function then so is g .

Either f and g are both Lebesgue integrable or neither are Lebesgue integrable.