

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

Week 10

Week 11

Week 12

- 34.1 Norms and inner-products on complex vector spaces
- 34.2 Convergence in L2
- 34.3 The Riesz--Fischer theorem
- 35.1 Multiple Riemann integration
- 35.2 Multiple Lebesgue integration

● Week 12 Feedback Form: Real Analysis II

○ Quiz: Week 12 : Assignment 12

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Week 12 : Assignment 12

The due date for submitting this assignment has passed.

Due on 2021-10-20, 23:59 IST.

As per our records you have not submitted this assignment.

 1) Let $f_n, f \in L^2(I)$ and assume that $\lim_{n \rightarrow \infty} \|f_n - f\| = 0$ (here the norm is the L^2 -norm). Then

3 points

- $\lim_{n \rightarrow \infty} \|f_n\| = \|f\|$.
- $f_n \rightarrow f$ a.e. on I .
- If $f_n \rightarrow g$ a.e. on I then $f = g$ a.e.
- If $g \in L^2(I)$ then $\int_I f_n g \rightarrow \int_I f g$.

No, the answer is incorrect.
Score: 0

Accepted Answers:
 $\lim_{n \rightarrow \infty} \|f_n\| = \|f\|$.
If $f_n \rightarrow g$ a.e. on I then $f = g$ a.e.
If $g \in L^2(I)$ then $\int_I f_n g \rightarrow \int_I f g$.

 2) Let I be a n -dimensional compact interval and let $f : I \rightarrow \mathbb{R}$ be a bounded function.

3 points

- If f is continuous then f is Riemann integrable.
- If f is continuous then f is Lebesgue integrable
- If $S \subset I$ and $f = \chi_S$ (the characteristic function of S) then f is Riemann integrable.
- If f is Riemann integrable then f is continuous a.e. on I .

No, the answer is incorrect.
Score: 0

Accepted Answers:
If f is continuous then f is Riemann integrable.
If f is continuous then f is Lebesgue integrable
If f is Riemann integrable then f is continuous a.e. on I .

3) Which of the following theorems for the Lebesgue integral in one dimension hold true in higher dimensions also?

2 points

- The dominated convergence theorem.
- The monotone convergence theorem.
- Any Riemann integrable function is Lebesgue integrable.
- Any Lebesgue integrable function is a limit of step functions.

No, the answer is incorrect.
Score: 0

Accepted Answers:
The dominated convergence theorem.
The monotone convergence theorem.
Any Riemann integrable function is Lebesgue integrable.
Any Lebesgue integrable function is a limit of step functions.