Х





(https://swayam.gov.in/nc_details/NPTEL)

reviewer4@nptel.iitm.ac.in ~

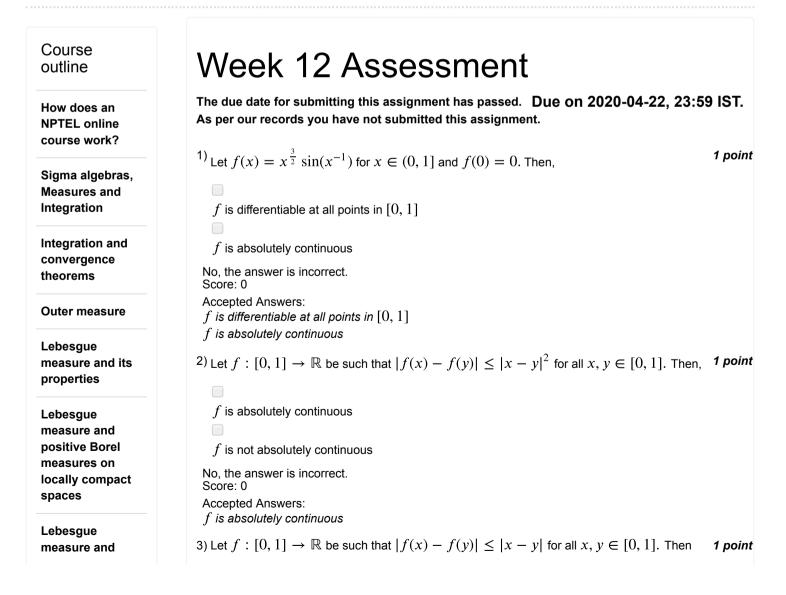
NPTEL (https://swayam.gov.in/explorer?ncCode=NPTEL) » Measure Theory (course)

Announcements (announcements)

About the Course (https://swayam.gov.in/nd1_noc20_ma02/preview) Ask a Question (forum)

Progress (student/home) Mentor (student/mentor)

Unit 13 - Riesz representation theorem and Lebesgue differentiation theorem



invariance properties

L[^]p spaces and completeness

Product spaces and Fubini's theorem

Applications of Fubini's theorem and complex measures

Complex measures and Radon-Nikodym theorem

Radon-Nikodym theorem and applications

Riesz representation theorem and Lebesgue differentiation theorem

 Riesz representation theorem I (unit? unit=86&lesson=87)

 Riesz representation theorem II (unit? unit=86&lesson=88)

 Hardy-Littlewood maximal function (unit? unit=86&lesson=89)

 Lebesgue differentiation theorem (unit? unit=86&lesson=90)

 Absolutely continuous functions I (unit? unit=86&lesson=91)

 Absolutely continuous functions II (unit? unit=86&lesson=92)

f maps Cantor set to a set of measure zero f maps Cantor set to a set of positive measure No, the answer is incorrect. Score: 0 Accepted Answers: f maps Cantor set to a set of measure zero 4) Let $f : \mathbb{R} \to \mathbb{C}$ be measurable such that for any interval $I \subset \mathbb{R}, |\int_{I} f(x) dx| \ge |I|$ 1 point where |I| is the Lebesgue measure of I. Then, $|f| \geq 1$ a.e $|f| < \frac{1}{2}$ a. e. No, the answer is incorrect. Score: 0 Accepted Answers: $|f| \geq 1$ a.e 5) Let $f \in L^1(\mathbb{R})$ and define $g(x) = \int_{-\infty}^x f(t) dt$. Then, 1 point g is uniformly continuous g is differentiable almost everywhere

No, the answer is incorrect. Score: 0 Accepted Answers: *g is uniformly continuous g is differentiable almost everywhere*

6) Let $f : \mathbb{R} \to \mathbb{R}$ be a continuous function and let $g(x) = \chi_{[0,1]}(x) f(x), x \in \mathbb{R}$ Which of **1 point** the following are correct?

The maximal function Mg of g is in $L^1(\mathbb{R})$

 $Mg \in L^2(\mathbb{R})$ $Mg \in L^{\infty}(\mathbb{R})$ No, the answer is incorrect.

Score: 0 Accepted Answers: $Mg \in L^2(\mathbb{R})$ $Mg \in L^{\infty}(\mathbb{R})$

7) Let $f \in L^{p}(\mathbb{R}^{n})$ for some 1 and let <math>Q be the unit cube in \mathbb{R}^{n} . Let **1** point $g(x) = \chi_{Q}(x)f(x) \ x \in \mathbb{R}^{n}$. Which of the following are correct?

The maximal function Mg of g belongs to $L^q(\mathbb{R}^n)$ for all $1 < q \le p$ Mg belongs to $L^q(\mathbb{R}^n)$ for all q > p Quiz : Week 12 Assessment (assessment? name=108)

Weekly Feedback forms

Video download

No, the answer is incorrect. Score: 0 Accepted Answers: The maximal function Mg of g belongs to $L^q(\mathbb{R}^n)$ for all $1 < q \leq p$ 8) Let f be a continuous function on \mathbb{R}^n and let Mf be the maximal function of f. If 1 point M f(0) = 0 then, f is zero almost everywhere f is a non-zero constant almost everywhere No, the answer is incorrect. Score: 0 Accepted Answers: f is zero almost everywhere 9) Let $f \in L^1(0,\infty)$ be such that $\int_0^a f(x)dx = 0$ for all $a \in \mathbb{R}$. Then, 1 point f is zero almost everywhere f is an odd function No, the answer is incorrect. Score: 0 Accepted Answers: f is zero almost everywhere 10Let $f \in L^1(\mathbb{R})$ be such that $\int_{-a}^a f(x) dx = 0$ for all $a \in \mathbb{R}$. Then using the above 1 point question, f is zero almost everywhere f is an odd function almost everywhere No, the answer is incorrect. Score: 0 Accepted Answers: f is an odd function almost everywhere