Announcements

Mentor



NPTEL » Real Analysis II

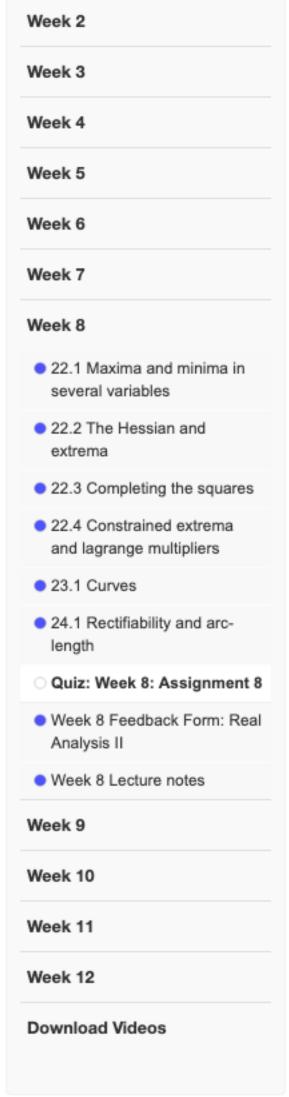
Week 0

Week 1

Course outline	Week 8: Assignment 8
How does an NPTEL online course work?	The due date for submitting this assignment has passed.
	As per our records you have not submitted this assignment.

Due on 2021-09-22, 23:59 IST.

1) Let  $K \subset \mathbb{R}^n$  be a compact set and  $f:K \to \mathbb{R}$  be a smooth function. Then 2 points has local maxima and minima at some points of K. f has global maxima and minima at some points of K. The derivative of f must vanish at the extrema. The derivative of f vanishes at those points of extrema that are also interior points of K. No, the answer is incorrect. Score: 0 Accepted Answers: f has local maxima and minima at some points of K. f has global maxima and minima at some points of K. The derivative of f vanishes at those points of extrema that are also interior points of K. 2) For this question, we will consider the function  $f(x, y) = x^2 + y^3$ ,  $g(x, y) = x^2 + y^4$  and  $h(x, y) = x^2 - y^4$ . Which of the following 2 points statements are true? The quadratic form obtained using the Hessian of these functions are all  $x^2$ All three functions have a critical point at 0. The function f has minima at the 0. The function g has a minima at 0. No, the answer is incorrect. Score: 0 Accepted Answers: The quadratic form obtained using the Hessian of these functions are all  $x^2$ All three functions have a critical point at 0. The function g has a minima at 0. 3) Consider the two parametrised curves given by  $e^{it}$  and  $e^{2it}$  defined on  $[0, 2\pi]$ . Which of the following statements are true? 2 points Both curves are equivalent. Both curves parametrise the unit circle. Both curves have the same length. The second curve has twice the length as the first. No, the answer is incorrect. Score: 0 Accepted Answers: Both curves parametrise the unit circle. The second curve has twice the length as the first.



4) Let  $f: \mathbb{R}^3 \to \mathbb{R}$  be given by  $x^k + y^k z^k$ , where k is a fixed positive integer. Which of the following is a local extrema of f subject to x + y + z = a, a > 0?

0 points

 $3^{1-k}$ a

No, the answer is incorrect. Score: 0

Accepted Answers:

$$\frac{a^k}{3^{1-k}}$$