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NPTEL

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Courses » Engineering Mathematics - I

Announcements

Course

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Unit 6 - Week 4 :

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Certification exam

Course outline

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Week 1 :

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Week 4 :

- Lecture 16 :
Taylor's Theorem
for Functions of
Two Variables
- Lecture 17 :
Maxima & Minima
of Functions of Two
Variables
- Lecture 18 :
Maxima & Minima
of Functions of Two
Variables (Cont.)
- Lecture 19 :
Maxima & Minima
of Functions of Two
Variables (Cont.)
- Lecture 20 :
Constrained
Maxima & Minima
- Quiz : Assignment
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Week 5 :

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Assignment 4

The due date for submitting this assignment has passed.
As per our records you have not submitted this assignment.

Due on 2019-02-27, 23:59 IST

1) The function $f(x, y) = xy$ at its critical point(s) _____ . 1 point

- a. has maxima
- b. has minima
- c. has global maxima
- d. has no extreme values

- (a)
- (b)
- (c)
- (d)

No, the answer is incorrect.

Score: 0

Accepted Answers:

(d)

2) The function $f(x, y) = 2x^4 + 2x^2y + y^2$ _____ at (0,0). 1 point

- a. is minimum
- b. is neither maximum nor minimum
- c. is maximum
- d. has global maxima

- (a)
- (b)
- (c)
- (d)

No, the answer is incorrect.

Score: 0

Accepted Answers:

(a)

3) The function $f(x, y) = x^2 + y^2 - 2a(x + y)$ _____ at (a, a). 1 point

- a. is minimum

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Week 11 :

Week 12 :

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Solution (c) (d)**No, the answer is incorrect.****Score: 0****Accepted Answers:**

(a)

4) 1 pointThe critical points of the function $f(x, y) = 2y^3 + 3y^2 - 3x^2 + 6xy$ are _____.

- a. (0,0) and (-2, -2).
- b. (0,0) and (-2,2).
- c. (0,0) and (2, -2).
- d. (0,0) and (2,2).

 (a) (b) (c) (d)**No, the answer is incorrect.****Score: 0****Accepted Answers:**

(a)

5) Saddle points of $f(x, y) = x^3 - y^3 - 3x + 12y$ are _____. 1 point

- a. (1,2) and (1, -2).
- b. (-1, -2) and (-1, -2).
- c. (1,2) and (-1, -2).
- d. (-1,2) and (-1, -2).

 (a) (b) (c) (d)**No, the answer is incorrect.****Score: 0****Accepted Answers:**

(c)

6) 1 pointUsing Taylor's formula, the quadratic approximation of $f(x, y) = \cos x \sin y$ at origin is

- a. $-x$
- b. x
- c. y
- d. $-y$

 (a) (b) (c) (d)**No, the answer is incorrect.****Score: 0****Accepted Answers:**

(c)

7) 1 point

Let $f(x, y) = x^2y + xy^2$ be linearly approximated by the Taylor's polynomial about the point $(1,1)$. The maximum error in this approximation at a point in the square $|x - 1| \leq 2$, $|y - 1| \leq 2$ is

- a. -12
- b. -24
- c. 12
- d. 24

- (a)
- (b)
- (c)
- (d)

No, the answer is incorrect.

Score: 0

Accepted Answers:

(d)

8) 1 point

The maximum and minimum of $f(x, y) = x^2 + 2x + 2y^2$ on unit circle are _____ respectively.

- a. -3 and -1.
- b. 3 and 1.
- c. 3 and -1.
- d. 3 and 1.

- (a)
- (b)
- (c)
- (d)

No, the answer is incorrect.

Score: 0

Accepted Answers:

(c)

9) 1 point

The maximum and minimum value of the function $f(x, y) = x^2 - 2xy + 2y$ given $0 \leq x \leq 2$ and $0 \leq y \leq 2$ are _____, respectively.

- a. -5 and 0.
- b. 9 and 0.
- c. 5 and 0.
- d. -9 and 0.

- (a)
- (b)
- (c)
- (d)

No, the answer is incorrect.

Score: 0

Accepted Answers:

(b)

10) 1 point

The value of $x \geq 0$ and $y \geq 0$ that maximize the utility function $u(x, y) = 6x^{\frac{1}{2}}y^{\frac{2}{3}}$ subject to constraint $2x + 4y = 12$ are _____, respectively.

- a. $x = 2$ and $y = 2$.
- b. $x = 4$ and $y = 1$.
- c. $x = 6$ and $y = 0$.
- d. $x = 0$ and $y = 3$.

- (a)
- (b)
- (c)
- (d)

No, the answer is incorrect.

Score: 0

Accepted Answers:

(a)

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