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

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

   No, the answer is incorrect.
   Score: 0
   Accepted Answers: (a)

3) The function \( f(x, y) = x^2 + y^2 - 2ax + y \) ________ at (a, a).
   a. is minimum
   b. is neither maximum nor minimum
   c. is maximum
   d. has global maxima

   No, the answer is incorrect.
   Score: 0
   Accepted Answers: (a)
4) The 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 \((2,2)\).

No, the answer is incorrect.
Score: 0
Accepted Answers:
(a)

5) Saddle points of \( f(x, y) = x^3 - y^3 - 3x + 12y \) are ________.
   - (a) \((1,2)\) and \((1,-2)\).
   - (b) \((-1,-2)\) and \((-1,2)\).
   - (c) \((1,2)\) and \((-1,-2)\).
   - (d) \((-1,2)\) and \((-1,-2)\).

No, the answer is incorrect.
Score: 0
Accepted Answers:
(a)

6) Using Taylor's formula, the quadratic approximation of \( f(x, y) = \cos x \sin y \) at origin is ________.
   - (a) \(-x\)
   - (b) \(x\)
   - (c) \(y\)
   - (d) \(-y\)

No, the answer is incorrect.
Score: 0
Accepted Answers:
(c)
Let \( f(x, y) = x^2 y + xy^2 \) 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. \(24\)

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

b) 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 \(1\).

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

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

- a. \(-5\) and \(0\).
- b. \(9\) and \(0\).
- c. \(5\) and \(0\).
- d. \(-9\) and \(0\).

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

10)
The value of $x \geq 0$ and $y \geq 0$ that maximize the utility function $u(x, y) = 6x^\frac{1}{2}y^\frac{3}{2}$ 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 $y = 3$.

No, the answer is incorrect.
Score: 0
Accepted Answers:
(a)