Unit 5 - Unit 4 - Week - 04 - Function of Two Variables, Limits, Continuity, Differentiability, Unconstrained and Constrained minimization

Assignment-4

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

Due on 2017-02-21, 23:59 IST.

1) *The domain of the function* $f(x) = \sqrt{2 - \sqrt{x}}$ *is* — *1 point*

- $\{x \in \mathbb{R} : x \geq 0\}$.
- $\{x \in \mathbb{R} : x \leq 4\}$.
- $\{x \in \mathbb{R} : 0 \leq x \leq 4\}$.
- $\{x \in \mathbb{R} : 0 \leq x \leq 2\}$.

No, the answer is incorrect.
Score: 0

Accepted Answers:
$\{x \in \mathbb{R} : 0 \leq x \leq 4\}$.

2) *The range of the function* $f(x, y) = e^{-\frac{1}{xy}}$ *is given by* — *1 point*

- $[0, \infty)$.
- $[1, \infty)$.
- $(0, \infty)$.
- $[0, 1]$.

No, the answer is incorrect.
Score: 0

Accepted Answers:
$[0, \infty)$.

3) $\lim_{(x,y)\to(0,0)} \frac{e^y \sin x}{x} =$ — *1 point*

- *undetermined*.
- 0.
- 1.
- e.

No, the answer is incorrect.
Score: 0

Accepted Answers:
1.

4) *The point of discontinuities of the function* $f(x, y) = \sin(\frac{1}{xy})$ *are* — *1 point*

$\{(x, y) \in \mathbb{R}^2 : x \neq 0,\ y \neq 0\}$.

$\{(x, y) \in \mathbb{R}^2 : x = 0\} \cup \{(x, y) \in \mathbb{R}^2 : y = 0\}$.

$\{(x, y) \in \mathbb{R}^2 : x = 0,\ y = 0\}$.

$\{(x, y) \in \mathbb{R}^2 : -1 \leq x \leq 1,\ -1 \leq y \leq 1\}$.

No, the answer is incorrect.
Score: 0

Accepted Answers:
$\{(x, y) \in \mathbb{R}^2 : x = 0\} \cup \{(x, y) \in \mathbb{R}^2 : y = 0\}$.

5) *For the function* $f(x, y, z) = \sin^{-1}(xyz)$ **1 point**

$\frac{\partial f}{\partial x} = -\frac{yz}{\sqrt{1-x^2y^2z^2}}$.

$\frac{\partial f}{\partial y} = \frac{xz}{\sqrt{1-x^2y^2z^2}}$.

$\frac{\partial f}{\partial z} = \frac{yx}{\sqrt{1+x^2y^2z^2}}$.

$\frac{\partial f}{\partial x} = -\frac{yz}{1-x^2y^2z^2}$.

No, the answer is incorrect.
Score: 0

Accepted Answers:
$\frac{\partial f}{\partial y} = \frac{xz}{\sqrt{1-x^2y^2z^2}}$.

6) *Let* $w = 2ye^x - lnz,\ x = ln(t^2 + 1),\ y = \tan^{-1} t,\ z = e^t$, *then* $\frac{dw}{dt}$ *at* $t = 1$ *is* **1 point**

$\pi/2 + 1$.

$\pi + 2$.

$\pi/2 + 2$.

$\pi + 1$.

No, the answer is incorrect.
Score: 0

Accepted Answers:
$\pi + 1$.

7) **0 points**

The derivative of the function $f(x, y) = xy + yz + zx$ *at* $(1, -1, 2)$ *in the direction of* $P = 3\hat{i} + 6\hat{j} - 2\hat{k}$ *i*

3.

2.

1.

0.

No, the answer is incorrect.
Score: 0

Accepted Answers:
3.

8) **1 point**

The direction in which the directional derivative of $f(x, y) = x^2 + xy + y^2$ *at* $(0, 1)$ *is equal to zero is gi*

$\hat{i} + \hat{j}$.

$\hat{i} - \hat{j}$.

$2\hat{i} - \hat{j}$.

$2\hat{i} + \hat{j}$.

No, the answer is incorrect.
Score: 0

Accepted Answers:
$2\hat{i} - \hat{j}$.

9) *For the function* $f(x, y) = x^3 - y^3 - 2xy + 6$ *1 po*

$(0, 0)$ *is a local minimizer.*

$(-2/3, 2/3)$ *is a local minimizer.*

$(-2/3, 2/3)$ *is a local maximizer.*

$(0, 0)$ *is a local maximizer.*

No, the answer is incorrect.
Score: 0

Accepted Answers:
$(-2/3, 2/3)$ *is a local maximizer.*

10) *The value of* a, b *with* $a \leq b$ *such that* $\int_a^b (2x - x^2)$ *has its minimum value are given by* **0 points**

$a = 0, b = 0$.

$a = 2, b = 2$.

$a = 0, b = 2$.

$a = 2, b = 0$.

No, the answer is incorrect.
Score: 0

Accepted Answers:
$a = 0, b = 0$.

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