

MTH301
DIRT; ORANGE MONKEY
POWER BY VU ASSASSIN'S

1. The first order partial derivative of $z = \sin xy$ is continuous

Everywhere

2. To find the limit of function $f(x, y) = 1/(x^2 + y^2)$ at $(0,0)$, if we approach $(0,0)$ through the line y-axis we get the value

0

3. The chain rule can be taken as the derivative of the order function and multiplying it items the derivative of the _____

Inner function

4. The rule is called the chain rule because we use it to take derivatives of _____ By chaining together their derivatives.

Composite function

5. Partial derivative of $f(x, y) = 2x^2y + 3y^3$ with respect to x is.

4xy

6. If the velocity (V1) of a car is 20m/s and velocity (V2) of bike is 40m/s, where both velocities are southward then which of the following would be the dot product of these velocities?

800

7. If the velocity (V) of a car 20m/s east north and making angle 60 m/s with east then the component of velocity in the direction of east is _____

-10

8. A ___ of continuous functions is continuous

All options

9. The partial derivative at any point on the surface represents the slope of tangent _____ at that point.

Line

10. Partial derivative of $f(x, y) = x^2 + y^2 +$ with respect to y is

$2y+x$

11. Limit of a function may exist at the point where it not defined

False

12. Limit of a function may not exist at the point where it not defined

True

13. The number square root of 2 is.

Irrational

14. The number of $3/11$ is

Rational

15. A plane $z=3$ is _____ to XY-plane

Parallel

16. Value of the function $f(x,y,z)=xyz$ at point $(2,2,2)$ is

8

17. In rectangular coordinate system the point $(-3,2)$ is in

Second quadrant

18. Which of the following function is not the function of one variable?

$M= g(s) + \text{constant}$

19. Intersection of two surfaces is a _____ in three dimensional spaces.

Curve

20. YZ-plane consists of all points where.

$X=0$

21. Value of the function $f(x,y,z) = x^2 + y^2 + z^2$ at the point (0,1,0) is

1

22. If $w=f(x,y,z)$ where $x=g(t)$, $y=f(t)$, $z=h(t)$ then

$$Dw/dt = dw/dx \cdot dx/dt + dw/dy \cdot dy/dt + dw/dz \cdot dz/dt$$

23. If f and its partial derivatives of the first, second and third orders are continuous on an open set, then at each point of the set is _____.

$$\frac{\partial^2 f}{\partial y^2 \partial x} = \frac{\partial^3 f}{\partial y \partial x \partial y} = \frac{\partial^3 f}{\partial x \partial y^2}$$

24. If $\lim_{(x,y,z) \rightarrow (x_0,y_0,z_0)} f(x,y,z) = L_1$ then

$$\lim_{(x,y,z) \rightarrow (x_0,y_0,z_0)} cf(x,y,z) = cL_1 \text{ if } c \text{ is constant}$$

25. If $\lim_{(x,y) \rightarrow (x_0,y_0)} f(x,y) = L_1$ and $\lim_{(x,y) \rightarrow (x_0,y_0)} g(x,y) = L_2$

$$\lim_{(x,y) \rightarrow (x_0,y_0)} f(x,y)/g(x,y) = L_1/L_2 ; L_2 \text{ not equal to } 0$$

26. If $w=f(x)$ where $x=g(r,s)$ then $\partial w / \partial s =$

$$\partial w / \partial s = dw/dx \cdot dx/ds$$

). If $w=f(x)$ where $x=g(r,s)$ then $\partial w / \partial r =$

$$\partial w / \partial r = dw/dx \cdot dx/dr$$

27. The partial derivative with respect to x of $f(x,y) = 3x^2y + 2y^2$ is _____.

$$6xy$$

28. Spherical coordinate ρ is related to the cylindrical coordinate as _____

$$\rho = \sqrt{r^2 + z^2}$$

29. How many real numbers exist between 1 and 5

Infinity

23. Value of the function $f(x,y,z) = \text{square root } x^2 + y^2 + z^2$ at the point (0,3,0) is

3

24. The number pi is.

Irrational

25. The product of continuous functions is continuous

True

26. Length of magnitude of a unit vector is _____

1

27. $F(x,y,z) = \text{square root } x^2+y^2+z^2$

[0, +infinity)

28. The chain rules help us to differentiate _____

Composite function

29. The partial derivative with respect to y of $f(x,y) = x^2 + 2y^2 + xy$ is _____.

4y+x

30. If $w = x+y$ while $x=r + s$ and $y = r-s$ then which of the following is partial derivative of w.r.t r?

1

31. The function of the form $f(x,y) = 3x^2x^5$ is _____ in the domain

Continuous everywhere

32. If $y=f(x)$ and $x=g(u)$ then by the chain rule $(dy/du) =$

$(dy/dx) \cdot (dx/du)$

33. Magnitude of the force vector; $F = -30$ Newton is _____.

30 Newton

34. Partial derivative $F(x,y) = x^2 + y^2 + xy$ with respect to y is

$2y + x$

35. If the partial derivative (w.r.t 'x' or 'y') at any point on the surface $x = f(x,y)$ is infinity then tangent plane at that point will be perpendicular to _____.

XY-plane

36. The function $x = f(x,y)$ represents a _____ in space

Line

37. The function $f(x,y,z) = (x^2 + yz) / (xy + z)$

$x, y > 0$

38. If $w = f(x,y)$ where $x = g(r,s)$ then $\partial w / \partial r =$

$\partial w / \partial r = \frac{dw}{dx} \frac{dx}{dr} + \frac{dw}{dy} \frac{dy}{dr}$

38. If two dogs are pulling a bone with force = 20 Newton's in opposite direction, then the resultant force is _____.

Zero Newton

39. A function $f(x,y) = \ln$ is not continuous at $(0,0)$ because

Limit value of the function is not equal to the function value at $(0,0)$

40. If $\lim_{(x,y,z) \rightarrow (x_0,y_0,z_0)} f(x,y,z) = L_1$ and $\lim_{(x,y,z) \rightarrow (x_0,y_0,z_0)} g(x,y,z) = L_2$

$\lim_{(x,y,z) \rightarrow (x_0,y_0,z_0)} f(x,y,z) / g(x,y,z) = L_1 / L_2$; L_2 not equal to 0

41. If $y = f(x)$ and $x = g(t)$ then by the chain rule $(dy / dt) =$

$dy / dx \cdot dx / dt$

42. Two vectors A and B are _____ if one vector A is scalar multiple of the other vector B.

Parallel

43. Two vectors are opposite vectors if they have _____.

Same magnitude and opposite magnitude.....both options

44. A quotient of continuous function is continuous, except where the denominator is _____.

Zero

45. The parabola ($y = ax^2 + bx + c$) is opening downward when

$A < 0$

46. Which coordinate system uses two distances and one angle?

Cylindrical

47. Which of the following is a two dimensional coordinate system.

Polar coordinate system

48. To find the limit of function $f(x,y) = x^2 + y/x^2$ at $(0,0)$, if we approach $(0,0)$ through the line x-axis we get the value

1

49. The partial derivative at any point on the surface represents the slope of tangent _____ at that point.

Line

50. A zero vector has magnitude equal to zero and _____ direction.

upward

51. The order of differentiation in an nth order partial derivative can be changed without affecting the final result whenever the function and all its partial derivatives of order less than or equal to 'n' are _____

Continuous

52. Which condition is necessary for a function to be continuous at any point (x,y)

All options

53. The $\lim_{(x,y) \rightarrow (-1,1)} (x^2 + y)^3 =$

8

54. Domain of the following function $f(x,y) = \text{square root}(x^2 + y^2 - 5)$ is

All real numbers with $(x^2 + y^2) \geq 5$

55. If the partial derivative (w.r.t 'x' or 'y') at any point on the surface " $z=f(x,y)$ is zero, then tangent plane at that point will be _____ to XY- plane

parallel

56. If g and h are continuous functions of one variable, then $f(x,y) = g(x) h(y)$ is a _____ function of x and y.

Continuous

57. Two vectors A and B are _____ if and only if their scalar is equal to zero.

Parallel

58. If $f(x,y) = y^2 e^x + 1$, then $\frac{\partial^2 f}{\partial x^2}$ is _____.

$e^x y^2$

59. A Function is not continuous at a point if its graph has a hole or break at that point

True

60. A function $f(x,y) = \dots$ is not continuous at (0,0) because

Limit value of the function is not equal to the function value at (0,0)

61. If $y = x+t$, $x=e^u$ and $t = \sin u$, then by chain rule, $dy/du =$

$e^u + \cos u$

62. Suppose that $z = f(x,y)$ is a function of two variable x and y, then partial derivative of function z with respect to x represents the _____ of the tangent to the curve.

None options

63. If the partial derivative (w.r.t 'x' or 'y') at any point on the surface " $z=f(x,y)$ is zero, then tangent plane at that point will be parallel to _____.

XY-plane

64. If $y = f(x)$ and $x = g(t)$ then by chain rule $dy/dt =$

Dy/dx . dx/dt

65. The function of the form $f(x,y)=3x^2x^5$ is _____ in the domain

Continuous everywhere

66. The product of continuous is continuous

True

67. Length or magnitude of a unit vector is _____.

1

68. Range of the function $f(x,y,z)=\text{square root}(x^2+y^2+z^2)$

[0,+infinity)

69. Range of the function $y = 3x^2 - 2$ is

All real numbers with $y \geq -2$

70. If $w = f(x)$ where $x=g(r,s)$ then $@w / @s =$

$@w / @s = dw@x / dx@s$

71. Domain of the following function is $f(x,y,z) = x$ In

For all $x,y \in \mathbb{R}; >0$

72. If f and its partial derivatives of the first, second and third orders are continuous on an open set, then at each point of the set is _____.

$@^2f / @y^2@x = @^2f/@y@x@y = @^3f / @x@y^2$

73. If $f(x,y) = yx^2 + 2$, then $@^2f / @y^2$ is _____.

0

74. The chain rule can be taken as the derivative of the outer function and multiplying it

times the derivative of the _____.

The inner function

75. Which of the following should be the scalar multiple (A) such that force : $F_1 = 20 \text{ N}$ and $F_2 = -60 \text{ N}$ SATISFY the

A = -1/3

76. A zero vector has magnitude equal to zero and _____ direction

upward

77. If $w = f(x,y)$ where $x=g(r,s)$ then $\partial w / \partial s =$

$\partial w / \partial s = \frac{dw}{ds} \frac{ds}{dr} + \frac{dw}{dy} \frac{dy}{ds}$

78. The chain rule states that the derivative of $f(g(x))$ is _____

$F'(g(x)) \cdot g'(x)$

79. For which of the following values of 'y' the partial derivative of $z = 2/y(x-1)$

$R - \{1,0\}$

80. If $y = \sin t$ and $t = e^{xu}$ then which of the following is partial derivative of w.r.t.x

ut cost

81. Value of money is an example of _____ quantity

Scalar

82. The function e^{xy} is continuous

In whole region of plane

83. A quotient of continuous function is continuous, except where the denominator is _____.

Zero

84. The point $(3, 189^\circ)$ and the point _____ are the same in polar system

$(-3, 9^\circ)$

85. The rose curve has $2n$ -equally spaced petals of loops if n is _____.

Odd

86. Vector valued function has

Domain and range consists real numbers

87. If $p(r, \theta)$ is a point in polar coordinate system, then θ is called

Acute angle of P

88. The arc length of the portion of the circular helix where $(dx/dt) = -\sin t$, $(dy/dt) = \cos t$ and $(dz/dt) = 1$ and $0 \leq t \leq \pi$, then the arc length is

$L = \pi \int_0^\pi \sqrt{2} dt$

89. The curve $r = a(1 + \cos \theta)$ ($a > 0$) is an equation of _____.

Spiral with $a = 1$

90. If $\mathbf{r}(t) = t^2\mathbf{i} + t\mathbf{j} + 3t\mathbf{k}$, then $d/dt [\mathbf{r}(t)] =$ _____

$2t\mathbf{i} + \mathbf{j} + 3\mathbf{k}$

91. The equation $r = a(1 + \cos \theta)$ represents _____.

Cardioids

92. A parametric curve C in 2-space or 3-space is called _____ if it is the graph of some smooth vector-valued function

Smooth

93. The point $p(r, \theta)$ in polar coordinate system lies on

Polar axis

94. Two surfaces are said to be orthogonal at the point of their intersection if their normals at that point are _____.

Perpendicular

95. Cross product of unit vectors \mathbf{i} and \mathbf{j} is _____ whenever the sense of rotation is from \mathbf{j} and \mathbf{i}

K

96. In the following equation of plane $a(x-x_0) + b(y-y_0) + c(z-z_0) = 0$ x_0, y_0 and z_0 are the coordinate of

The vector perpendicular to the plane

97. Let f be a function of two variables with continuous 2nd ordered partial derivative in some circle centered at a critical point (x_0, y_0) and let $D = f_{xx}(x_0, y_0)f_{yy}(x_0, y_0) - f_{xy}^2(x_0, y_0)$.

If $D=0$

then no conclusion can be drawn

98. If the rectangular components of a vector in-plane are $[3, 4]$ then the magnitude of the vector is _____.

12

99. The gradient of a scalar function not empty set is defined as

Grad(not empty set) = downward triangle(not empty set)

100. If f is a function of x and then the gradient of f is defined as

Downward triangle $f(x, y) = f_x(x, y)\mathbf{i} + f_y(x, y)\mathbf{j}$

101. If a vector of magnitude '4' is making angle 30-degree with Y-axis then its component vector along x-axis is _____.

2*sqrt(3)

102. The function $f(x, y)$ grow most rapidly in the direction of

Gradient vector

103. If two of the vectors are collinear among three non-zero vectors then their scalar Triple product is _____.

3

104. The surface $z=f(x,y)$ neither falls nor rises (decreases or increases) at any point in the _____ of Gradient(z)

Direction

105. To express the location of any object on earth which coordinate system is used

Cylindrical coordinate system

106. Two vectors are _____ vectors if they have same magnitude and direction

Equal or same...both

107. Two vectors are _____ vectors if they have same magnitude and opposite direction.

opposite

108. Given a surface $f(x,y,z)=0$. The direction ratios of a line normal to the surface are _____.

F_x, f_y, f_z

109. Let f be a function of two variables at a critical point $(0,2)$, $f_{xy}(0,2)=4$, $f_{yx}(0,2)=0$ and $f_{xy}(0,2) = 4$ so $D= f_{xy}(0,2) - f_{yx}(0,2)=-16$

Then f has a saddle point at $(0,2)$

110. A plane can be completely determined if we know

A point and direction of perpendicular to it

111. $F(x_0,y_0)$ is an absolute minimum of $f(x,y)$ on domain, if _____.

$F(x_0,y_0) > f(x,y)$ for all $(x,y) \in D$

112. If $f(x,y,z) = x^2 + 2y - 3z^2$ then f_x, f_y and f_z are

$F_x=2x, f_y=2$ and $f_z=-6z$

113. Gradient of a temperature of any geographical region on earth results into a _____.

Vector quantity

114. Gradient of a scalar function always results in a _____ function

Scalar

115. Let f be a function of two variables with continuous 2nd ordered partial derivative in some circle centered at a critical point (x_0, y_0) and let $D = f_{xx}(x_0, y_0)f_{yy}(x_0, y_0) - f_{xy}^2(x_0, y_0)$
 $D > 0$ and $f_{xx}(x_0, y_0) > 0$

Then f has a relative minimum at (x_0, y_0)

116. Let f be a function of two variables with continuous 2nd ordered partial derivative in some circle centered at a critical point (x_0, y_0) and let $D = f_{xx}(x_0, y_0)f_{yy}(x_0, y_0) - f_{xy}^2(x_0, y_0)$.
If $D > 0$ and $f_{xx}(x_0, y_0) < 0$,

then f has a relative maximum at (x_0, y_0) .

117. Let f be a function of two variables with continuous 2nd ordered partial derivative in some circle centered at a critical point (x_0, y_0) and let $D = f_{xx}(x_0, y_0)f_{yy}(x_0, y_0) - f_{xy}^2(x_0, y_0)$.
If $D < 0$,

then f has a saddle point at (x_0, y_0) .

118. Let f be a function of two variables at a critical point $(1, 0)$ $f_{xx}(1, 0) = 4$ $f_{yy}(1, 0) = 2$ and $f_{xy}(1, 0) = 0$ so $D = f_{xx}(1, 0)f_{yy}(1, 0) - f_{xy}^2(1, 0) = 8$

$f_{xx}(1, 0)$ is positive. Then f has a relative minimum at $(1, 0)$

119. Let f be a function of two variables with continuous 2nd ordered partial derivative in some circle centered at a critical point (x_0, y_0) and let $D = f_{xx}(x_0, y_0)f_{yy}(x_0, y_0) - f_{xy}^2(x_0, y_0)$.

If $D > 0$ and $f_{xx}(x_0, y_0) > 0$, then f has a relative minimum at (x_0, y_0)

120. In order to find the critical points, we need to put f_x and f_y equal to _____.

0

121. Let $P_0(x_0, y_0, z_0)$ be any point on the surface $z = f(x, y)$. If $f(x, y, z)$ is differentiable at then the normal line at the point $P(x_0, y_0, z_0)$ has the equation

$$\mathbf{x} = x_0 + f_x(P_0)t, \mathbf{y} = y_0 + f_y(P_0)t, \mathbf{z} = z_0 + f_z(P_0)t$$

122. How many directional derivatives can be found at any point on the surface $z = f(x, y)$?

Infinitely many

123. Gradient of a scalar function always results in a _____ function

Scalar

124. The surface $z = f(x,y)$ falls (decreases) most rapidly at any point in the _____ of gradient (z)

Direction

125. If the velocity (v_1) of a car is 20m/s eastward and velocity (v_2) of bike is 40 m/s northward then which of the following would be the dot product of these velocities

zero

126. $Y = \sqrt{9-x^2}$, $-3 \leq x \leq 3$ is a _____ form of a curve in the plane

Explicit

127. A _____ need not be the highest point on the entire graph

Relative maximum

128. Cross product of two non zero vectors results into a vector lying _____.

In the plane perpendicular to both vectors

129. A differentiable function of two variables might have a _____ point

Saddle

130. Displacement (shortest distance b/w two points from one point to another) is an example of _____ quantity

Vector

131. The volume of a rectangular parallelepiped is given by the formula $V = xyz$ then dV

$$dV = yzdx + xzdy + zydz$$

132. Let f be a function of two variables at a critical point $(0,2)$, $f_{xx}(0,2) = -2$, $f_{yy}(0,2) = -1$ and $f_{xy}(0,2) = 0$ so $D = f_{xx}(0,2) f_{yy}(0,2) - f_{xy}^2(0,2) = 2$

Then f has a relative maximum at $(0,2)$

133. While computing the gradient, the Del operator (triangle) is applied on a _____

Scalar field like temperature of region

134. A continuous function on a set that is not closed and bounded need not have any _____.

Absolute extrema

135. A differentiable function of a single variable might have a _____ point

Inflection

136. Let m be the slope and $P_0(x_0, y_0)$ be the point of required line, then point – slope form is

$$y - y_0 = m(x - x_0)$$

137. The absolute maximum is also called local maximum

False

138. Parametric equations for the straight line through the point $A(1, 2, 3)$ and parallel to the vector $v = 4i + 5j$

$$x = 1 + 4t, y = 2 + 5t, z = 3$$

139. Two surfaces are said to intersect orthogonally if they are orthogonal at _____
Common to them

Every point

140. The function decreases most rapidly in the direction of

Mode (downward triangle f)

141. The rose curve has n -equally spaced petals or loops if n is _____.

Odd

142. The vector r is continuous at t_0 if _____.

All options

143. A smooth vector-valued function has a _____ line at every point on its graph

Tangent

144. If $r(t) = ti + 2tj$, then $d/dt [r(t)] =$ _____.

$i + 2j$

145. $\int_0^1 \int_0^1 \int_0^1 x^2 y^2 z^2 \, dx \, dy \, dz =$

OCTANT

First octant (+, +, +) Formed by positive sides of the three axis.

Second octant (-, +, +) Formed by -ve x-axis and positive y and z-axis.

Third octant (-, -, +) Formed by -ve x and y axis with positive z-axis.

Fourth octant (+, -, +) Formed by +ve x and z axis and -ve y-axis.

Fifth octant (+, +, -) Formed by +ve x and y axis with -ve z-axis.

Sixth octant (-, +, -) Formed by -ve x and z axis with positive y-axis.

Seventh octant (-, -, -) Formed by -ve sides of three axis.

Eighth octant (+, -, -) Formed by -ve y and z-axis with +ve x-axis.

Quadrant

First quadrant (+, +)

Second quadrant (+, -)

Third quadrant (-, -)

Fourth quadrant (-, +)

1. Every point in three dimensional space can be described by -----
- coordinates

Three

2. What are the direction cosines for the line joining the points (1, 3, 2) and (7, -2, 3)?

$$\frac{6}{\sqrt{62}}, \frac{-5}{\sqrt{62}} \text{ and } \frac{1}{\sqrt{62}}$$

3. The angles which a line makes with positive x, y and z-axis are known as -----

Direction angles

Plane parallel to xz-plane

4. Domain of the function $f(x, y, z) = \sqrt{x^2, y^2, z^2}$ is

Entire 3D-Space

5. Suppose $f(x, y) = xy - 2y$ where $x = 3t + 1$ and $y = 2t$. Which one of the following is true?

$$\frac{df}{dt} = -16t - 2$$

6. For a function $f(x, y, z)$, the equation $\frac{\partial^2 f}{\partial x^2} + \frac{\partial^2 f}{\partial y^2} + \frac{\partial^2 f}{\partial z^2} = 0$ is known as -----

Laplace's Equation (Laplace)

7. Magnitude of vector \vec{a} is 2, magnitude of vector \vec{b} is 3 and angle between them when placed tail to tail is 45 degrees. What is $\vec{a} \cdot \vec{b}$?

4.2

8. Let R be a closed region in two dimensional space. What does the double integral over R calculates?

Area of the region R

9. Two surfaces are said to be orthogonal at a point of their intersection if their normal at that point are -----

Perpendicular

10. Two surfaces are said to intersect orthogonally if their normals at every point common to them are -----

Perpendicular

11. Let R be a closed region in two dimensional space. What does the double integral over R calculates?

Area of the region R

12. Two surfaces are said to be orthogonal at a point of their intersection if their normals at that point are -----

Perpendicular

13. Two surfaces are said to intersect orthogonally if their normals at every point common to them are -----

In opposite direction

14. Let the function $f(x, y)$ has continuous second-order partial derivatives $(f_{xx}, f_{yy}$ and $f_{xy})$ in some circle centered at a critical point (x_0, y_0) and let $D = f_{xx}(x_0, y_0)f_{yy}(x_0, y_0) - f_{xy}^2(x_0, y_0)$ If $D > 0$ and $f_{xx}(x_0, y_0)$

Relative maximum at

15. Let the function $f(x, y)$ has continuous second-order partial derivatives $(f_{xx}, f_{yy}$ and $f_{xy})$ in some circle centered at a critical point (x_0, y_0) and let $D = f_{xx}(x_0, y_0)f_{yy}(x_0, y_0) - f_{xy}^2(x_0, y_0)$ If $D = 0$ then -----

No conclusion can be drawn.

16. There is one-to-one correspondence between the set of points on co-ordinate line and _____.

Set of real numbers

17. Which of the following is associated to each point of three dimensional spaces?

A natural Number

18. All axes are positive in _____ octant.

First

19. Let R be a closed region in two dimensional space. What does the double integral over R calculates?

Radius of inscribed circle in R

20. Two surfaces are said to be orthogonal at a point of their intersection if their normals at that point are _____.

Perpendicular

21. By Extreme Value Theorem, if a function $f(x, y)$ is continuous on a closed and bounded set R , then $f(x, y)$ has both _____ on R .

Absolute maximum and absolute minimum value

22. 15. Let the function $f(x, y)$ has continuous second-order partial derivatives (f_{xx} , f_{yy} and f_{xy}) in some circle centered at a critical point (x_0, y_0) and let $D = f_{xx}(x_0, y_0)f_{yy}(x_0, y_0) - f_{xy}^2(x_0, y_0)$ if $D > 0$ and $f_{xx}(x_0, y_0) < 0$ then f has _____.

Relative maximum at

23. Let the function $f(x, y)$ has continuous second-order partial derivatives (f_{xx} , f_{yy} and f_{xy}) in some circle centered at a critical point (x_0, y_0) and let $D = f_{xx}(x_0, y_0)f_{yy}(x_0, y_0) - f_{xy}^2(x_0, y_0)$ if $D = 0$ then _____.

No conclusion can be drawn.

24. Every real number corresponds to ----- on the coordinate line

Infinite number of points

25. The is one –to – one correspondence between the set of the points on co-ordinate and -----

Set of natural number

26. Which of the following is associated to each point of three dimensional spaces?

A natural number

27. All axes are positive in-----octant

First

28. The spherical co-ordinates of a point are $\left(\sqrt{3}, \frac{\pi}{3}, \frac{\pi}{2} \right)$ when

are its cylindrical co-ordinates?

$\sqrt{3} \quad - \quad - \quad \sqrt{3} \quad -$

29. Suppose $f(x,y) = xy - 2y^2$ Where $x=3t + 1$ and $y=2t$ which one of the following is true ?

$$\frac{df}{dt} = -4t + 2$$

30. Let $w = f(x, y, z)$ and $x = g(r, s)$, $y = h(r, s)$, $z = t(r, s)$ then by chain rule

$$\frac{\partial w}{\partial r} =$$

$$\frac{\partial w}{\partial x} \frac{\partial x}{\partial r} + \frac{\partial w}{\partial y} \frac{\partial y}{\partial r} + \frac{\partial w}{\partial z} \frac{\partial z}{\partial r}$$

31. Is the function $f(x,y)$ continuous at origin ? if not ,why?

$$f(x, y) = \begin{cases} 0 & \text{if } x \geq 0 \text{ and } y \geq 0 \\ 1 & \text{otherwise} \end{cases}$$

F(x, y) is not defined

32. *Is the function $f(x, y)$ continuous at origin ? if not ,why?*

$$f(x, y) = \begin{cases} 0 & \text{if } (x, y) \neq 0 \\ 1 & \text{if } (x, y) = 0 \end{cases}$$

F(x, y) is not defined

33. *Let R be a closed region in two dimensional spaces. What does the double integral over R calculate?*

Radius of inscribed circle in r

34. *Every real number corresponds to _____ on the co-ordinate line.*

Infinite number of points

35. *There is one-to-one correspondence between the set of points on co-ordinate line and _____.*

Set of natural numbers

36. *Which of the following is associated to each point of three dimensional spaces?*

A natural Number

37. *All axes are positive in _____ octant*

First

38. By Extreme Value Theorem, if a function $f(x, y)$ is continuous on a closed and bounded set R , then $f(x, y)$ has both _____ on R .

Absolute maximum and absolute minimum value

39. Let x be any point on co-ordinate line. What does the inequality $-3 < x < 1$ means?

The set of all real numbers between -3 and 1

40. Which of the following number is associated to each point on a co-ordinate line?

A real number

41. Which of the following set is the union of set of all rational and irrational numbers?

Set of real numbers

42. ----- planes intersect at right angle to form three dimensional space.

Three

43. each point of domain, the function -----

Is defined

44. Suppose $f(x, y) = xe^{3xy}$ Which one of the following is correct?

$$\frac{\partial f}{\partial x} = 3x^2e^{xy} + x^3ye^y$$

45. Suppose $f(x, y) = xe^{3xy}$ Which one of the following is correct?

46. Suppose $f(x, y) = 2xy$ where $x = t^2 + 1$ and $y = 3 - t$ which one of the following is true?

$$\frac{\partial f}{\partial t} = -6t^2 + 12t - 2$$

47. i, j and k are unit vectors in the direction of x -axis, y -axis and z -axis respectively. Suppose that $\vec{a} = 2i + 5j - k$

$$\sqrt{30}$$

48. Which of the following are direction ratios for the line joining the points $(1, 3, 5)$ and $(2, -1, 4)$?

$$1, -4 \text{ and } -1$$

49. Which of the following is geometrical representation of the equation $y = x^2$, in three dimensional space?

Parabola

50. Which of the following is the interval notation of real line?

$$(-\infty, +\infty)$$

51. What is the general equation of parabola whose axis of symmetry is parallel to y -axis?

$$y = ax^2 + bx + c \quad (a \neq 0)$$

52. Which of the following is geometrical representation of the equation $y = 4$, in three dimensional space?

A point on y -axis

53. Plane is an example of -----

Surface

54. Function $f(x, y) = \sqrt{y - x}$ is continuous in the region ----- and discontinuous elsewhere.

$$X \leq y$$

55. At critical points function can assume

Zero value

56. A plane can be perfectly determined by

One point and normal vector

57. Intersection of two straight lines is -----

Point

58. Plane is a ----- surface.

Two-dimensional

59. What are the parametric equations that correspond to the following vector equation?

$$\vec{r}(t) = \sin^2 t \hat{i} + (1 - \cos 2t) \hat{j}.$$

$$X = \sin^2 t, y = 1 - \cos 2t, z = 0$$

60. What are the parametric equations that correspond to the following vector equation?

$$\vec{r}(t) = (2t - 1) \hat{i} - 3\sqrt{t} \hat{j} + \sin 3t \hat{k}$$

$$X = 2t - 1, y = -3\sqrt{t}, Z = \sin 3t$$

61. What is the derivative of following vector-valued function?

$$\vec{r}(t) = (\cos 5t, \tan t, 6\sin t)$$

$$\vec{r}(t) = (-5\sin 5t, \sec^2 t, 6\cos t)$$

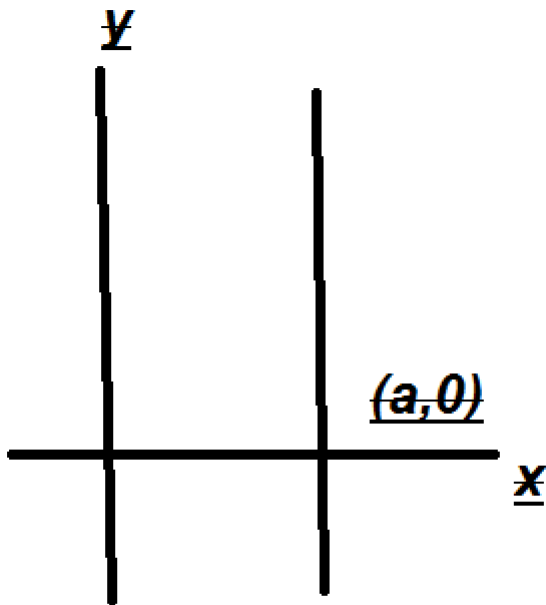
62. The following differential is exact $dz = (x^2 y + y)dx - xdy$

False

63. Which one of the following is correct Wallis Sine formula when n is even and $n \geq 2$?

$$\int_0^{\frac{\pi}{2}} \sin^n x dx = \frac{\pi (n-1)(n-3)(n-5) \dots \frac{5}{6} \frac{3}{4} \frac{1}{2}}$$

64. Match the following equation in polar co-ordinates with its graph. r a where a is an arbitrary constant



65. If the equation of a curve, in polar co-ordinates, remains unchanged after replacing (r, θ) by $(r, \pi - \theta)$ then the curve is said to be symmetric about which of the following?

Y-axis

66. If the equation of a curve, in polar co-ordinates, remains unchanged after replacing (r, θ) by $(-r, \theta)$ then the curve is said to be symmetric about which of the following?

Pole

67. What is the amplitude of a periodic function defined by $f(x) = \sin 3x$

0

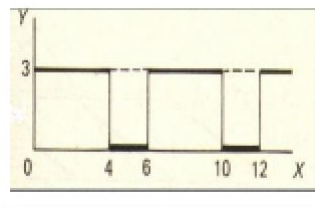
68. What is the period of a periodic function defined by $f(x) = 4 \cos 3x$?

$\frac{2\pi}{3}$

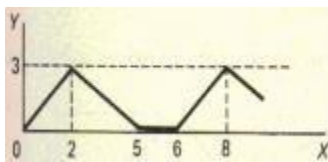
3

69. Match the following periodic function with its graph.

$$f(x) = \begin{cases} 3 & 0 < x < 4 \\ 0 & 4 < x < 6 \end{cases}$$

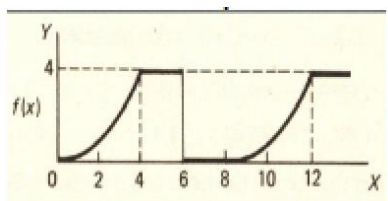


70. What is the period of periodic function whose graph is as below?



6

71. What is the period of periodic function whose graph is as below?



8

72. Let L denotes the Laplace Transform. If $L\{F(t)\} = f(s)$ where s is a constant. And $\lim_{t \rightarrow \infty} \left(\frac{f(t)}{t} \right)$ Exists then which of the following equation holds?

—

73. Which of the following is Laplace inverse transform of the function $f(s)$ defined by $f(s) = \frac{3}{s-2} - \frac{2}{s}$?

$3e^{2t} - 2$

74. Let (x_1, y_1, z_1) and (x_2, y_2, z_2) be any two points in three dimensional space. What does the formula $\sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2 + (z_2 - z_1)^2}$ calculates?

Midpoint of the line joining these two points

75. Let the functions $P(x, y)$ and $Q(x, y)$ are finite and continuous inside and at the boundary of a closed curve C in the xy -plane. If $(P dx + Q dy)$ is an exact differential then

$$\int_c^{\infty} (P dx + Q dy) =$$

Zero

76. What is Laplace transform of the function $F(t)$ if $F(t) = t$?

$$L\{t\} = \frac{1}{s}$$

77. What is the value of $L\{e^{5x}\}$ if L denotes Laplace transform? }

$$L\{e^{5x}\} = \frac{1}{s-5}$$

78. Evaluate the line integral $\int_c (3x+2y)dx + (2x-y)dy$ the line segment from $(0, 0)$ to $(0, 2)$.

2

79. Evaluate the line integral $\int_c (2x+y)dx + (x^2-y)dy$ where C is the line segment from $(0, 0)$ to $(2, 0)$.

0

80. Which of the following are direction ratios for the line joining the points $(1, 3, 5)$ and $(2, -1, 4)$?
2, -3 and 20

81. if $R = \{(X, Y) / 0 \leq X \leq 2 \text{ and } 1 \leq y \leq 4\}$, then $\iint_R (6x^2 + 4xy^3) dx =$

$$\iint_{10}^{42} (6x^2 + 4xy^3) dx dy$$

82. Planes intersect at right angle to form three dimensional spaces.

Three

83. If the positive direction of x, y axes are known then ----- the positive direction of z -axis.

Left hand rule tells

84. What is the distance between points (3, 2, 4) and (6, 10, -1)?

$$\frac{7}{\sqrt{2}}$$

85. The equation $ax + by + cz + d = 0$, where a, b, c, d are real numbers, is the general equation of which of the following?

Plane

86. Domain of the function $f(x, y) = \sqrt{y - x^2}$ is

$$y \geq x^2$$

87. What is the period of a periodic function defined by $f(x) = \sin x/2$?

$$4\pi$$

88. The graph of an odd function is symmetrical about --

Origin

89. The path of integration of a line integral must be ----

Continuous and single-valued

90. Sign of line integral is reversed when -----

Direction of path of integration is reversed.

91. What is Laplace transform of the function $f(t)$ if $f(t) = \sin 3t$

$$\frac{3}{s^2 + 9}$$

92. π is an example of -----

Irrational numbers

93. Straight line is a special kind of -----

Curve

94. An ordered triple corresponds to ----- in three dimensional spaces.

A unique point

95. The angles which a line makes with positive x , y and z -axis are known as -----

Direction angles

96. Is the function $f(x, y)$ continuous at origin? If not, why? $f(x, y) = 4xy + \sin 3x^2 y$

$F(x, y)$ is continuous at origin

97. Two vectors are opposite vectors if they have _____.
both (a) and (c)

98. If two dogs are pulling a bone with force = 20 Newton in opposite direction, the resultant force is

Zero Newton

99. If the velocity (V_1) of a car is 20m/s and velocity (V_2) of bike is 40m/s, where both velocities are southward then which of the following would be the dot product of these velocities?

-800

100. *Limit of a function may exist at the point where it
not defined*

False

101. *Limit of a function may exist at the point where it
not defined* **False**

102. A _____ of continuous functions is continuous

All (a), (b) and (c)

103. *A quotient of continuous function is continuous, except where
the denominator is _____*

Zero

104. *Intersection of two surfaces is a _____ in three
dimensional space*

Curve

105. *Face the parabola ($y=ax^2 + bx + c$) is opening
downward when*

$A < 0$

106. *Which coordinate system uses two distances and one
angle?*

Cylindrical

107. Which of the following is a two dimensional coordinate system **Polar coordinate system**
108. Limit of a function exist may exist at the point where it not defined **False**
109. The number square root of 2 is **None of these /1.41**
110. A plane $z=3$ is _____ to XY plane. **Parallel**
111. Value of the function $f(x,y,z)=xyz$ at point $(2,2,2)$ is **8**
112. The number $3/11$ is
113. In rectangular coordinate system the point $(-3,2)$ is in **Second quadrant**
114. Which of the following function is not the function of one variable?
 $m=g(s) + \text{content}$
115. XZ- Plane consists of all points **where $X=0$**
116. Value of the function $f(x,y,z)=x^2 + y^2 + z^2$ at the point $(0,1,0)$ is **1**

117. If $w=f(x,y,z)$ where $x=g(t)$, $z=h(T)$ then

$$Dw/dt = \frac{\partial w}{\partial x} \frac{dx}{dt} + \frac{\partial w}{\partial y} \frac{dy}{dt} +$$

$$\frac{\partial w}{\partial z} \frac{dz}{dt}$$

118. If f and its partial derivatives of the first, second and third orders are continuous on an open set, then at each point of the set _____

$$\frac{\partial^2 f}{\partial y^2 \partial x} = \frac{\partial^2 f}{\partial y \partial x \partial y} = \frac{\partial^2 f}{\partial x \partial y^2}$$

119. All axis are negative in -----octant

Eight

120. In three dimensional space, intersection of two surfaces is a -

Plane

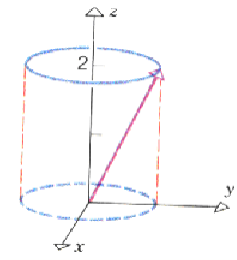
$$\frac{\partial^2 f}{\partial^2 x} + \frac{\partial^2 f}{\partial^2 y} + \frac{\partial^2 f}{\partial^2 z} = 0$$

121. For a function $f(x, y, z)$, the equation $\frac{\partial^2 f}{\partial^2 x} + \frac{\partial^2 f}{\partial^2 y} + \frac{\partial^2 f}{\partial^2 z} = 0$ is known as -----

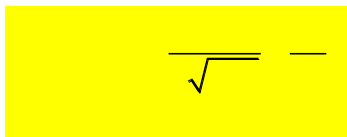
Laplace's Equation

122. Match the following vector-valued function with its graph.

$$r(t) = \cos t \hat{i} + \sin t \hat{j} + 2t \hat{k} \quad \text{and} \quad 0 \leq t \leq 2\pi$$



123. What is the derivative of following vector-valued function?



124. What is the derivative of following vector-valued function?

$$\vec{r}(t) = (e^t, t^2, \sec 2t)$$



125. The following differential is exact $dz = (x^2 + y^2) dx - 2xy dy$

False

126. Which one of the following is correct Wallis Sine formula when n is even and $n \geq 2$?

$$\int_0^{\frac{\pi}{2}} \sin^n x \, dx = \frac{\pi}{2} \frac{(n-1)}{n} \frac{(n-3)}{(n-2)} \frac{(n-5)}{(n-4)} \dots \frac{5}{6} \frac{3}{4} \frac{1}{2}$$

127. If $a > 0$, then the equation, in polar co-ordinates, of the form $r^2 = a^2 \cos 2\theta$ represent which of the following family of curves?

Lemiscate

128. Which of the following condition must be satisfied for a vector field \vec{F} to be a conservative vector field?



129. If $\lim_{(x,y,z) \rightarrow (x_0,y_0,z_0)} f(x,y,z) = L_1$ then

$\lim_{(x,y,z) \rightarrow (x_0,y_0,z_0)} cf(x,y,z) = cL$ If c is constant

130. if $\lim_{(x,y) \rightarrow (x_0,y_0)} F(x,y) = L_1$ $\lim_{(x,y) \rightarrow (x_0,y_0)} g(x,y) = L_2$

$\lim_{(x,y) \rightarrow (x_0,y_0)} f(x,y)/g(x,y) = L_1/L_2$; L_2 not equal to 0

131. The partial derivative with respect to x of $f(x,y) = 3x^2y + 2y^2$ is

$6xy + 2y^2$

132. Spherical coordinate ρ is related to the cylindrical coordinate as _____

$\rho = \rho$

133. How many real numbers exist between 1 and 5

Infinity

134. Value of the function $f(x,y,z) = \text{square root } x^2 + y^2 + z^2$ at the point $(0,3,0)$ is _____

3

135. The number π is.

Irrational

136. Length of magnitude of a unit vector is _____

1

137. The product of continuous functions is continuous True

138. $F(x,y,z) = \text{square root } x^2+y^2+z^2$
[0, +infinity

139. The product of continuous function is continuous True

140. Range of the function $y=3x^2-2$ is
All real numbers with $y \geq -2$

141. if the partial derivative (w,r,t 'x' or 'y') at any point on the surface " $z=f(x,y)$ is zero, than tangent plane at that point will be _____ to XY- plane
parallel

142. Two vectors A and B are _____ if and only if their scalar is equal to zero. Perpendicular

143. The partial derivative with respect to x of $f(x,y) = 3x^2y + 2y^2$ is _
6xy

144. The chain rule can be taken as the derivative of the order function and multiplying it items the derivative of the _____
The inner function

145. Two vectors are opposite vectors if they have _____
Both (A) and (c)

149. Magnitude of the force vector $F = -30$ Newton, is

30 ewton

150. Two vectors A and B are _____ if and only if their
social product is equal to zero

Perpendicular

151. Which of the following should be the scalar multiple (A)
such that force ; $F_1=20N$ and $F_2 = -60N$ satisfy the

$A=-1/3$

152. A zero vector has magnitude equal to zero and

Direction Arbitrary

153. The chain rule states that the derivative of $f(g(x))$ is _____

$f'(g(x)) \cdot g'(x)$

154. The order of differentiation in an n th order partial derivative
can be change without affecting the final result whenever the
function and all its partial derivatives of order less than or
equal to 'n' are _____

Continuous

155. For which of the following values of 'y' the partial derivative
of

$z=2/y(x-1)$ EXIST
 $R-\{1,0\}$

156. To find the limit of $f(x,y) = x^2 + y/x^2$ at $(0,0)$ if we approach $(0,0)$ through the line x -axis, we get the value

1

157. Value of money is an example of _____
Quantity Scalar

158. IF $y = \sin t$ and $t = e^{xu}$ then which of the following is partial derivative of w.r.t.x

ut cost

159. The function $z = F(x,y)$ represents a _____ in space Line

160. If two dogs are pulling with force = 20 Newtons in opposite direction, then the resultant force is _____

Zero Newton

161. Limit of a function may exist at the point where it not **defined False**

162. A _____ of continuous function is continuous

All options

163. The function e^{xy} is continuous In

whole region of xy plane

164. A quotient of continuous function is continuous, expect where the denominator is _____

Zero

165. if the partial derivative (w.r.t 'x' or 'y') at any point on the surface " $z=f(x,y)$ is zero, than tangent plane at that point will be parallel to _____

XY plane

166. Two determine the position of any object in a room we need how many coordinates.

3(3 dimension)

167. Which of the following is a two dimensional coordinate system

Cylindrical coordinate system

168. Which of the following is the representation of spherical coordinates

(ρ, θ, ϕ)

169. In cartesian coordinate system all axes are at _____ degree to each other

90

170. intersection of two surfaces is a _____ in three dimensional space

Curve

171. The function $f(x,y,z) = (x^2$

$+yz)/(xy+z)$ $Xy+z=0$

172. For which of the following values of 'y' the partial derivative of $z=2/y(x-1)$

$R-\{1,0\}$

173. YZ- plane of all points where

$$X=0$$

174. Domain of the following function $y = x/3x-4$

All real number

175. Cylindrical coordinate system is used to the position of any object is Any dimension

176. To express the location of any object on earth which coordinate system is used

Cylindrical coordinate system

177. Face of the parabola $(y-ax^2 + bx+ c)$ is opening downward when $A < 0$

178. Cylindrical coordinate “y” is related to the Cartesian coordinate as

$R = \cos\theta$

179. Which coordinate system uses two distances and one angle?

Rectangular

180. Which of the following function is not the function of one variable $y =$

$f\{x,y\}$

181. Which of the following is a two dimensional coordinate system

Cylindrical coordinate system

182. The chain rule can be taken as the derivative of the outer function and multiplying it times the derivative of the _____

The inner function

183. The rule is called the chain rule because we use it to take derivatives of _____ by changing together their derivative

Composite function

184. The partial derivative at any point on the surface represents the slope of tangent _____ at that point

Line

185. Partial derivative $f(x,y) = x^2 + y^2 + xy$ with respect to y is

None options

186. Spherical coordinate θ is related to the cylindrical coordinate as _____

$\theta = \theta$

187. Which of the following is a two dimensional coordinate system Polar coordinate system

188. Which coordinate system uses two distance and one angle?

Cylindrical

189. A plane $z=3$ is _____ to XY-plane

Parallel

190. Which of the following function is not the function of one variable

$M=g(s)+ \text{constant}$

191. XZ-plane consists of all points where

$x=0$

192. A zero vector has magnitude equal to zero and

_____ **direction No**

193. Which condition is necessary for a function to be continuous at any point (x,y)

All options

194. If $w = x + y$ while $x=r + s$ and $y = r-s$ then which of the following is partial derivative of w is w.r.t.r?

1

195. If g and h are continuous functions of one variable, then $f(x,y) = g(x)h(y)$ is a _____ function of x and y .

Continuous

196. The function of the form $f(x,y) = 3x^2x^5$ is _____ in the domain **continues everywhere**

197. If the velocity (v_1) of a car is 20m/s eastward and velocity (v_2) of bike is 40 m/s northward then which of the following would be the dot product of these velocities

-800

198. Suppose that $z=(x,y)$ is a function of two variable x and y , then partial derivative of function z with respect to x represents the _____ of the tangent of the curve

None OPTIONS

199. The product of continuous functions is continuous **True**

200. The function e^{xy} is continuous In whole region of

xy plane

201. The partial derivative of $f(x,y)=x^2y^{-2}$ with respect to x is

x^2e^{-y}

202. Let $f(x,y) = e^{2y} \cos x$ then $f_x(x,y) =$
 $e^{2y} \sin x$

203. If $y=f(x)$ and $x=g(t)$ then by chain rule

$$dy/dt =$$

$$Dy/dx * dx/dt$$

204. The partial derivative with respect to y of $f(x,y) = x^2 + 2y^2 + xy$ is

$$4y + x$$

205. The mixed 2nd order partial derivatives of $z=xy$ is equal to

$$xy$$

206. Scalar Triple Product of vectors $A=[1,0,0]$, $B=[0,1,0]$ and $C=[0,0,1]$ is-----

$$1 \text{ (not sure)}$$

207. The order of differentiation in an n th order partial derivative can be changed without affecting the final result whenever the function and all its partial derivatives of order less than or equal to ' n ' are-----.

Differentiable (not sure)

208. Let $f(x,y)$ be a function with continuous second order partial derivatives in some circle centered at a critical point (x_0, y_0) and,

let $D = f_{xx}(x_0, y_0)f_{yy}(x_0, y_0) - [f_{xy}(x_0, y_0)]^2$. If $D = 0$, then-----
 $f(x,y)$ has a saddle point at (x_0, y_0) . (not sure)

209. Geometrically the magnitude of Scalar Triple Product gives the-----.

Volume of Parallelepiped

210. Value of money is an example of----- quantity

Scalar

211. Let $f(x,y)$ be a function with continuous second order partial derivatives in some circle centered at a critical point (x_0, y_0) and, Let $D = f_{xx}(x_0, y_0)f_{yy}(x_0, y_0) - [f_{xy}(x_0, y_0)]^2$. If $D > 0$ and $f_{xx}(x_0, y_0) > 0$, then -----

$f(x,y)$ has a saddle point at (x_0, y_0) . (not sure)

212. Two vectors of magnitudes $[4, 5]$ making an angle of 30° , then the area of parallelogram associated with these two vectors is _

Square units

213. For the function $z = f(x, y, z)$, the total differential dz is equal to $dw = df = f_x(x, y, z)dx + f_y(x, y, z)dy + f_z(x, y, z)dz$

214. For the function $z = f(x, y, z)$, the total differential dz is equal to $dz = df = f_x(x, y)dx + f_y(x, y)dy$

215. Which condition is necessary for a function to be continuous at any point (x, y)

All of the given

216. The function e^{xy} is continuous

In whole region

217. To find limit of $f(x, y) = \frac{x^2 + y}{x^2}$ at $(0, 0)$, if we approach $(0, 0)$ through the line x -axis we the value of the **1**

218. Can we evaluate the following integral in given order of the integration

$$\int_0^1 \int_{\frac{1}{2}}^1 e^{y^2} .$$

No

219. Cross product of the two vector non zero vector results into a vector lying ---.

In the plane perpendicular

220. Value of the money is an example of the ----- quantity

Scalar

221. In the following equation of the plane $a(x-x_0) + b(y-y_0) + c(z-z_0)$
 x_0, y_0 and z_0 are coordinates of
a vector perpendicular

222. Let a function $f(x, y) = x^3 + (17 - x - y^2)^2$ THEN $F_{xx} =$ -----
 $6x + 1$

223. Two surfaces are said to be intersect orthogonally if they are orthogonal at – common to them

Every point

224. The function $z = z(x, y)$ of the variables x and y represents a ---
in space

Surface

225. What is the absolute maximum value of the function below on the interval $[-3, 0]$

$$f(x) = \sqrt[5]{(x+1)^2 + \frac{2x}{5}}$$

1

226. All continuous function have a minimum and maximum value

False

227. if The function f is continuous on the close interval $[a, b]$, then f has on absolute maximum value and an absolute an minimum value on $[a, b]$

Extreme valued theorem

228. Area of the triangle is equal to -----
 $\frac{1}{2}(\text{base}) \times (\text{altitude})$

229. The rule is called the chain rule because we use it to take derivative of ----- by chaining together their derivatives.
Composite functions

230. Gradient of a scalar function always results in a ----- function.
Vector

231. A differentiable function of two variables might have a ----- point.
Saddle

232. After reversing the order of the limits of the $\int_0^1 \int_{x^2}^1 y \cos x \, dy \, dx$ we

get

$$\int_0^1 \int_0^{\sqrt{y}} y \cos x \, dy \, dx$$

233. The $\int_0^1 e^{y^2} \, dx =$
 e^{y^2}

234. Spherical coordinate 'z' is related to the cylinder coordinate as
 $z = p \cos \phi$

235. The gradient of a scalar function ϕ is defined as
 $\text{grad } \phi = \nabla \phi$

236. The absolute maximum is also called local maximum
False

237. The function $f(x)=2x-x^2$ has a critical point at -----

1

238. If the derivate (w.r.t 'x' or 'y') at any point on the surface :
 $z = f(x, y)$ is infinity then tangent plan at that at the point will be perpendicular to-----

xy-plan

$$239. \int_0^{\ln 6} \int_0^{\ln 3} f(x, z) dx dy = \int_0^{\ln 3} \int_0^{\ln 6} f(x, z) dy dx$$

True

240. Which coordinate system uses two distances and one angle?

Cylindrical

241. For which of the following values of 'y' the partial derivative

$$\text{of } z = \frac{2}{y(x-1)}$$

$R-\{0\}$

$$242. \int_0^{10} f(X^3Y + Y^2) dy \text{ -----}$$

$$50x^3 + \frac{1000}{3}$$

243. If two of the vector are collinear among three among three non-zero vectors then their scalar triple product is-----

1

$$244. \int_0^1 \int_0^1 dx dy \text{ -----}$$

0

245. Value of the function $f(x,y,z) =xy$ at the point $(1,x^3,y^2)$

$$x^2 + y^2$$

246. If the vector (v) of the a car is 20m/s east-north and making angle 60 degree with east then the component f the velocity in the east is -----

10

247. Cross product of the unit vectors 'I' and 'j' is ----- whenever the sense of the rotation is form of 'j' to 'I' is

K

248. if the rectangular components of a vector in xy-plan are [3,4] then the magnitude of the vector is -----

12

249. if f is a function of x and then the gradient of f is define as
250.

251. An ordered pair corresponds -----on the plane

A unique point

252. Plane is the special type of -----

Surface

253. There is one to one correspondence between the set of points on a coordinate line and-----

Set of real numbers

254. What is general equation of parabola whose axis is symmetry is parallel to y-axis?

$$x = ay^2 + bx + c(a \neq 0)$$

255. If the spherical coordinates of a points $(2, \frac{\pi}{4}, 0)$, then z- coordinates in rectangular coordinate system is-----

$\sqrt{2}$

256. The function $z = \frac{1}{\sqrt{x+y}}$ is discontinuous at origin because at the point $(0,0)$, its -----

Approaches towards infinity

257. The function $f(x, y) = \sqrt{y-x}$ is continuous in the region -----
----- and discontinuous elsewhere

$x > y$

258. Every differentiable function is always-----

Continuous

259. The vector $a^r \times b^1$ is----- to both a^r and b^1

Parallel

260. Gradient of a scalar function always result in a -----
-- function.

Vector

261. The direction of gradient of any point on a surface is-----
- to the tangent plane at that point.

Perpendicular

262. For a function $z = f(x, y)$, the total differential is defined as;

$dz = f_x(x, y)dx + f_y(x, y)dy$

263. For a function $f(x, y)$ to have both absolute maximum and minimum, it must be continuous on-----

A closed and bounded

264. The volume of parallelepiped with dimension x, y and z is -----

$V = xyz$

265. *Let x be the length, width and height of a cube. The area of bottom will be*

$A = x^3$

266. *A double integral and integrated become identical provided that the integrant ----- over the given rectangular region.*

Bounded

267.