MTH-301 Quiz File 2

By KNOWLEDGE FOR US

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1. The rose curve has 2n-equally spaced petals of loops if n it's____

Answer: Even.

2. In 3-space, r(t)I + y(t)j + z(t)k, is smooth function of t if x'(t), y'(t), z'(t) are____and there is no value of t at which all three derivatives are zero.

Answer: Continuous.

3. The position of the limacon relative to the polar axis depends on whether____appears in the equation and whether + or – occurs.

Answer: (d) Both (a) or (b).

4. Equation of the tangent line of vector valued function r(t) at $r(t_0)$ is

Answer: $r=r(t_0) + tr'(t_0)$

5. The point $(3, 189^0)$ and the point___are the same in polar system.

Answer: $(-3,189^0)$

6. The graph of r=(1+t)i + (-3t)j +(2+4t)k is the

Answer: line parallel to the vector i - 3j + 4k.

7. For a vector function r(t) = $\sqrt{2t}$ i + (t+1) j-k then length of r(t).

Answer: ||r (t) ||$\sqrt{2t^2}$

8. The Lemniscate are centered at the origin, but position relative to the polar axis depends on the sign preceding the a^2 and whether___appears in the equation.

Answer: (d) Both (a) or (b).

9. In polar coordinate system, $x-axis$ is also called

Answer: Polar axis

10. In polar coordinates, $\iint_R f(x,y)dxdy = ---$

Answer: $\iint_G f\ (r\cos\theta, r\sin\theta)\ r dr\ d\theta$

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

Answer: Polar angle of p.

12. The orientation of the rose relative to the polar axis depends on the sign of the constant a and whether___appears in the equation.

Answer: (d) Both (a) or (b).

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13. The curve, $r = \theta(\theta \geq 0)$, is an equation of_____.

Answer: spiral with a=1

14. In the integration of polar coordinates *dxdy* is replaced by ___.

Answer: $rdr\ d\theta$

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

Answer: $\frac{1}{27}$

16. The equation of the form:
$r = a \sin n\theta$,
$r = a\ cos\ n\theta$,
Represent flower – shaped curves called_____.

Answer: roses.

17. The equation, $r^2 = 4\cos 2\theta$, represent a____.

Answer: Lemniscate

18. In polar coordinate system, the equation $r = a$ represents a circle with center at____.

Answer: $x - axis$ and passes through the origin.

19. $\iint_R f(x, y)dxdy$, Can be expressed in polar coordinates as____.

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Where $a \le \theta \le b$ *and* $c \le r \le d$.

Answer: $\int_a^b \int_c^d f(r,\theta)\, r\, dr d\theta$

20. The point (-42, 35^0) and the point___are the same in polar system.

Answer: (42, 215^0)

21. The equation $r = a\theta$ represents___, where a is positive.

Answer: Spiral

22. $\int_0^{\pi}\int_0^{1} r^2 \; dr \; d\theta =$_____.

Answer: $\frac{\pi}{3}$

23. If $a > 0$, then equations of the form:

$r^2 = a^2 \cos 2\theta$, $r^2 = -a^2 \cos 2\theta$,

$r^2 = a^2 \sin 2\theta$, $r^2 = -a^2 \sin 2\theta$,

Represent propeller-shaped curves called_____.

Answer: Lemniscate

24. Let $\bar{r}(t) = 2t\,\hat{i} + 3t\,\hat{j}$, then $\bar{r}^{-1}(t) = 2\,\hat{r} + 3\,\hat{j}$.

Answer: True.

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25. The graph of the equation $r = a(1+\sin\theta)$ is symmetric about____.

Answer: $y-axis$.

26. The relation between the polar coordinates (r,θ) and the rectangular coordinates (x, y) is given by____.

Answer: $x = r\cos\theta,\ y = r\sin\theta$

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

Answer: polar axis.

28. The rose curve has n-equally spaced petals of loops if n is____.

Answer: Odd.

29. $\int_0^1 \int_0^1 \int_0^1 xyz\ dx\ dy\ dz =$_____.

Answer: $\frac{1}{8}$

30. $\int_0^{\frac{\pi}{2}} \sin^2\theta\ d\theta =$____.

Answer: $\frac{1}{2}\bullet\frac{\pi}{2}$

31. If a point $p(r,\theta)$ in polar coordinate system, then r is the

Answer: Pole.

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32. In the polar coordinate system, the equation $r = -2a \sin\theta$ represents a circle passes through the origin, with center on____.

Answer: y-axis, below the origin

33. While changing Cartesian Integral into polar integral, we change x by___and y by____.

Answer: $\cos\theta, \sin\theta,$

34. If a point $p(r,\theta)$ in polar coordinate system, then r is the distance of p from___.

Answer: pole

35. The graph of the equation $r = a(1-\cos\theta)$ is symmetric about___.

Answer:

36. Polar coordinate of a point are $\left(-4\frac{-3\pi}{2}\right)$. Which of the following is another possible polar coordinate representation of this point?

Answer: $\left(4,\frac{-\pi}{3}\right)$

37. The equation $r^2 = a^2 \cos 2\theta$ represents____.

Answer: Lemniscate

38. The graph of the equation $r = a(1+\cos\theta)$ represents___.

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Answer: Cardioid

39. Polar coordinate of a point are $\left(5, \frac{-\pi}{4}\right)$, which of the following is another possible polar coordinate representation of this point?

Answer: $\left(5, \frac{3\pi}{4}\right)$

40. Graph of a vector-valued function can fail to have a tangent vector at appoint because

Answer: derivative does not exists at that point

41. The vector r is continuous at t_0 if_____.

Answer: (d) all (a), (b) and (c).

42. Graph of $c = x_0 i + y_0 j + z_0 k$

Answer: is the curve passing through the point (x_0, y_0, z_0)

43. For a function r (t) = x (t) I + y (t)j in 2-space we define $\lim_{t>a} r(t)$=_____.

Answer: (Limt->a x (t)) i + ($\lim_{t->y}$ (t)) j

44. For a function r (t) = x (t)I + y(t)j in 2-space we define $\lim_{t>a} r(t)$=_____.

Answer: (Limt->a x (t)) i + ($\lim_{t->y}$ (t)) j

For a function r (t) = x (t) I + y (t) j+z (t) k in 3-space we define $\lim_{t->a}$ r (t) =_____.

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Answer: $(\lim_{t->a} x(t))i+(\lim_{t\to\alpha} y(t))j+(\lim_{t\to\alpha} z(t))k$

45. In 2D-space the parametric equation x= x(t), y=y(t) can be expressed in single vector equation

Answer: r(t)= x (t)i + y (t) j

46. If a point p(r, θ) in polar coordinate system, then r is the distance of p from the

Answer: None of these

47. Graph of c = $x_0i+y_0j+z_0k$

Answer: Is the curve passing through the point (x_0, y0, z0)

48. The vector r is continuous at t_0 if _____. □ r (t_0) is defined

Answer:

- r(t) exists
- limt→t0ts; r (t) = r (limt→$t0_0$). …….. All options

49. The relation between the polar coordinates (r, θ) and the rectangular coordinates (x,y) is given by _____.

Answer: x = r cos θ, y = r sin θ

50. Graph of a vector-valued function can fail to have a tangent vector at a point because

Answer: Does not exist or because the derivative is zero at the Point……both options

51. The equations of the form r= as in nθ r=a cos nθ represent flower – shaped curves called _____.

Answer: Roses

52. The roses curve has 2n-equally spaced petals of loop if n is ____.

Answer: Even

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53. r(t) = x(t)i + y(t)j

Answer: Is a vector valued function

54. Vector valued function has

Answer: domain consists of real numbers and the range consists of vectors

55. Real valued function has

Domain and range are sets of real number

56. If p(r, θ) is a point in polar coordinate system, then θ is called

Answer: polar angle of P

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

Answer: L = ∫ (under root (2)dt)

58. If r (t) = t^2i + tj + 3tk, then d/dt(r (t) =_____.

Answer: 2ti + j + 3k

59. The equation r= a (1 + cos θ) represents _____

Answer: Cardioid

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

Answer: Smooth

61. The point p(r, θ) in polar coordinate system lies on

Answer: Polar axis

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62. The point $(3, 189^0)$ and the point _____ are the same in polar system.

Answer: $(-3, 9^0)$

63. IF r(t) = x(t)i + y(t)j +z(t)k is a vector – valued function in 3-space, and if x(t), y(t) and z(t) are differentiable, then d/dt [r(t)] = _____.

Answer: x' (t)i + y'(t)j + z(t)k

64. The graph of r = (1+t)i + (-2 + 3t)j – 4k is the

Answer: Line that passes through the point (1,3,-4)

65. For a vector valued function r(t) = 3i + 4j – 0k then length of r(t)

Answer: ||r||=5

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

Answer: Tangent

67. The orientation of the rose relative to the polar axis depends on the sign of the constant a and whether _____ appears in the equation

Answer: Both (a) and (b)…sin and cosθ

68. The equation r = a θ represents _____ where a is positive.

Answer: Spiral

69. In polar coordinates ∫∫ f(x, y)dxdy = _____.

Answer: ∫∫f(r cos θ, r sin θ) rdrdθ

70. The graph of r = (1+t)I + (-3t)j + (2+4t)k is the

Answer: Line parallel to the vector i-3j+4k

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71. While changing Cartesian Integral into Polar integral, we change x by _____ and y by _____.

Answer: cos θ, sin θ

72. In polar coordinate system, the equation r = 2a sin θ represents a circle passes through the origin, with center on _____.

Answer: X-axis, above to the origin

73. Let r (t) = 2ti + 3tj then r'(t) = 2i + 3j

Answer: True

74. In the integration in polar coordinates, dxdy is replaced by _____.

Answer: rdrdθ

75. The curve, r= θ (θ ≥ 0), is an equation of _____.

Answer: Spiral with a = 1

76. A curve that winds around the origin infinitely many times in such a way that r increases (or decreases) steadily as θ increases is called a _____.

Answer: Spiral

77. The equation $r^2 = a^2 \cos 2\theta$ represents.

Answer: Lemniscate

78. In 3D-space the parametric equation x= x(t), y=y(t), z=z(t) can be expressed in single vector equation as

Answer: r (t) = x(t)i + y(t)j+z(t)k

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79. Polar co-ordinates of a point are (-1, -3pi/4). Which of the following is another possible polar co-ordinates representation of this point?

Answer: (-1, pi/4)

80. In 3-space, r(t) = z(t)I + y(t)j+z(t)k, is smooth function of t if x'(t), y'(t) and z'(t) are _____ and there is no value of t at which all three derivatives are zero.

Answer: Continuous

81. Polar co-ordinates of a point are (-4, -3pi/2). Which of the following is another possible polar co-ordinates representation of this point?

Answer: (4, -pi/2)

82. In polar coordinate system x-axis is also called

Answer: Polar axis

83. If a > 0, then equations of the form
r2 = a2 cos2θ, r2 = − a2 cos 2θ r2 = a2 sin 2θ, r2 = − a2 sin 2θ
represent propeller – shaped curves called _____.

Answer: Lemniscate

84. Polar co-ordinates of a point are (-3, -3pi/4). Which of the following is another possible polar co-ordinates representation of this point?

Answer: (-3, pi/4)

85. The equation of the form:

r=a+b sin θ, r = a−b sin θ, r =a+b cos θ, r = a−bcos

θ produce polar curves called _____.

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Answer: Limacon

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

Answer: Tangent

87. Geometrically, the graph of a continuous vector-valued function is a (an) _____

Answer: Unbroken curve

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