

MTH301 QUIZ 2 2021

SEARCHING FILE FOR FINAL TERM

PROVIDE BY ORANGE MONKEY TEAM

1. For a function $\mathbf{r}(t) = x(t)\mathbf{i} + y(t)\mathbf{j}$ in 2-space we define $\lim_{t \rightarrow a} \mathbf{r}(t) = \underline{\hspace{2cm}}$.

$(\lim_{t \rightarrow a} x(t))\mathbf{i} + (\lim_{t \rightarrow a} y(t))\mathbf{j} \dots$ confirm from handouts

2. For a function $\mathbf{r}(t) = x(t)\mathbf{i} + y(t)\mathbf{j} + z(t)\mathbf{k}$ in 3-space we define $\lim_{t \rightarrow a} \mathbf{r}(t) = \underline{\hspace{2cm}}$.

$(\lim_{t \rightarrow a} x(t))\mathbf{i} + (\lim_{t \rightarrow a} y(t))\mathbf{j} + (\lim_{t \rightarrow a} z(t))\mathbf{k} \dots$ confirm from handouts

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

$\mathbf{r}(t) = x(t)\mathbf{i} + y(t)\mathbf{j} \dots$ confirm from handouts

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

None of these.....confirm from handouts

5. Graph of $\mathbf{c} = x_0\mathbf{i} + y_0\mathbf{j} + z_0\mathbf{k}$

Is the curve passing through the point (x_0, y_0, z_0)

6. The vector $\mathbf{r}$ is continuous at t_0 if _____.

- $\mathbf{r}(t_0)$ is defined
- $\mathbf{r}(t)$ exists
- $\lim_{t \rightarrow t_0} \mathbf{r}(t) = \mathbf{r}(\lim_{t \rightarrow t_0} t)$ All optionsconfirm handouts

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

$$x = r \cos \theta, y = r \sin \theta \dots\dots\text{confirm from handouts}$$

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

does not exist or because the derivative is zero at the point.....both options.....confirm from handouts

9. The equations of the form

$$r = a \sin n\theta$$

$$r = a \cos n\theta$$

represent flower – shaped curves called _____.

Roses.....confirm from handouts

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

Even.....confirm from handouts

11. $\mathbf{r}(t) = x(t)\mathbf{i} + y(t)\mathbf{j}$

is a vector valued function.....confirm from handouts

12. Vector valued function has

domain consists of real numbers and the range consists of vectors.....confirm from handouts

13. Real valued function has

Domain and range are sets of real number.....confirm from handouts

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

polar angle of P

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

$$L = \int (\sqrt{2}) dt \dots \text{confirm from handouts}$$

16. If $\mathbf{r}(t) = t^2\mathbf{i} + t\mathbf{j} + 3t\mathbf{k}$, then $d/dt(\mathbf{r}(t)) = \underline{\hspace{2cm}}$.

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

17. The equation $r = a(1 + \cos \theta)$ represents $\underline{\hspace{2cm}}$

$$\text{Cardioid} \dots \text{confirm from handouts}$$

18. A parametric curve in 2-space or 3-space is called $\underline{\hspace{2cm}}$ if it is the graph of some smooth vector-valued function.

$$\text{Smooth} \dots \text{confirm from handouts}$$

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

$$\text{Polar axis} \dots \text{confirm from handouts}$$

20. The point $(3, 189^\circ)$ and the point $\underline{\hspace{2cm}}$ are the same in polar system.

$$(-3, 9^\circ)$$

21. Give the integral $\iint f(x,y) dx dy$, can be expressed in polar coordinates as $\underline{\hspace{2cm}}$ where $a \leq \theta \leq b$ and $c \leq r \leq d$

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

22. If $\mathbf{r}(t) = x(t)\mathbf{i} + y(t)\mathbf{j} + z(t)\mathbf{k}$ is a vector-valued function in 3-space, and if $x(t)$, $y(t)$ and $z(t)$ are differentiable, then $d/dt [\mathbf{r}(t)] = \underline{\hspace{2cm}}$.

$$x'(t)\mathbf{i} + y'(t)\mathbf{j} + z'(t)\mathbf{k}$$

23. The graph of $\mathbf{r} = (1+t)\mathbf{i} + (-2 + 3t)\mathbf{j} - 4t\mathbf{k}$ is the

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

24. For a vector valued function $\mathbf{r}(t) = 3\mathbf{i} + 4\mathbf{j} - 0t\mathbf{k}$ then length of $\mathbf{r}(t)$

$$\|\mathbf{r}\|=5$$

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

Tangent

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

Both (a) and (b)...sin and cos theota..confirm

27. The equation $r = a\theta$ represents _____ where a is positive.

Spiral

28. In polar coordinates $\iint f(x, y) dx dy =$ _____.

$$\iint f(r \cos \theta, r \sin \theta) r dr d\theta$$

29. The graph of $\mathbf{r} = (1+t)\mathbf{i} + (-3t)\mathbf{j} + (2+4t)\mathbf{k}$ is the

Line parallel to the vector $\mathbf{i} - 3\mathbf{j} + 4\mathbf{k}$confirm

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

$\cos \theta, \sin \theta$confirm

31. In polar coordinate system, the equation $r = 2a \sin \theta$ represents a circle passes through the origin, with center on _____.

y -axis, above to the origin

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

True....confirm

33. In the integration in polar coordinates, $dx dy$ is replaced by ____.

$r dr d\theta$confirm

34. The curve, $r = \theta$ ($\theta \geq 0$), is an equation of _____.

Spiral with $a = 1$confirm

35. 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 _____.

Spiral.....confirm

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

Lemniscates....confirm

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

$r(t) = x(t)i + y(t)j + z(t)k$confirm

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

$(-1, \pi/4)$

39. In 3-space, $\mathbf{r}(t) = x(t)\mathbf{i} + y(t)\mathbf{j} + z(t)\mathbf{k}$, 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.

Continuous...confirm

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

$(4, -\pi/2)$

41. If $\mathbf{r}$ is a vector-valued function in 2-space or 3-space, then $\frac{d}{dt} \left[\int \mathbf{r}(t) dt \right]$ =

$\mathbf{r}(t)$...confirm

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

Polar axis

43. 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 _____.

Lemniscates.....confirm

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

$(-3, \pi/4)$

45. The equation of the form:

$$r = a + b \sin \theta, r = a - b \sin \theta$$

$$r = a + b \cos \theta, r = a - b \cos \theta$$

produce polar curves called _____.

Limacons

46. Equation of the tangent line of vector valued function $\mathbf{r}(t)$ at $\mathbf{r}(t_0)$ is

$$\mathbf{r} = \mathbf{r}(t_0) + t \mathbf{r}'(t_0)$$

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

Tangent...confirm

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

Unbroken curve.....confirm

49. The point $p(r, 0)$ in polar coordinates system lies as

y-axis

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

odd

51. rose curve has 2n-equally spaced petals or loops if n is _____.

Even

