MTH101 SPRING (2021)

ATTIQ KUNDI

QUIZ NO.3 FILE

1. Forms of L 'Hopital's rule are ------.

Ans. All of the given/above

2. Length of the curve y= sin (x) from x= 0 to x = π is --------.

Ans. $\int_{a}^{\pi} \sqrt{1+\cos^2 x}\,dx$

3. Distance between (3,-2) and (4, 0) using the distance formula is ---------.

Ans. None of these.

4. A ------- Function is a function that has continuous derivatives up to some desired order over some domain.

Ans. Smooth.

5. Arc length of the curve y=x from x =0 to x=2 is -------.

Ans. All of the above.

6. The volume V of a cylinder with base area A and height h is calculated by ----------.

Ans. V= A h

7. Definite integral indicating the arc length of the curve $y=x^2$ between x=0 and x=2 is -------.

Ans. None of these.

8. The value of $\int_0^1 e^{-x}\,dx$ --------.

Ans. None of these.

9. Evaluate $\frac{d}{dx}\int_2^x t\,dt$

Ans. x.

10. The value of lim …….. ?

Ans. 1. $\lim_{z\to a}\frac{\ln(x-a)}{\ln(e^x-e)}$

11. Find the area between y=z and y= -z (z- 4).

Ans. $\frac{9}{2}$

12. To get better approximation to actual area under a continuous curve over a closed intervals we have to increase -------.

Ans. Number of subintervals.

13. Arc length of the smooth curve x=g(y) for y=a, to y=b is -------.

Ans. $L = \int_a^b \sqrt{1 + (\frac{dx}{dy})^2 dy}$

14. For a sequence $\{a_n\}$ if the difference between successive terms $a_n + 1 - a_n \geq 0$.

Ans. Non decreasing.

15. The value of lim $\lim_{z \to 0} \frac{e^{x^2} - 1}{\cos x - 1}$.

Ans. -2

16. The volume by the washer perpendicular to the x-axis is -----.

Ans. $\int_a^b \pi([f(x)]^2 - [g(x)]^2)dx$

17. Distance formula is based on the ------.

Ans. Pythagoras theorem

18. Define integral indicating the arc length of the curve y=cos hx between x=0 and x= a is -------.

Ans. $\int_a^b \pi([f(x)]^2 - [g(x)]^2)dx$

19. The area bounded by the parabola $y^2 = x$, straight line $y = 4$ and y – axis is ----.

Ans. No clear ans .

20. The value of Lim? $\lim_{z \to a} \frac{\ln \tan x}{\ln x}$

Ans. No clear ans.

21. The value of $\int_{-2}^{2} |x|\, dx$ ------.

Ans. 0

22. Length of the arc y=c from x=0 to x=1 is -------.

Ans. 1.

23. Arc length of the curve $y = x^{3/2}$ on [1, 3] is ------.

Ans. $\int_1^3 \sqrt{1+[\frac{d}{dx}(x^{3/2})]^2}\, dx$

24. A strictly monotone sequence is --------.

Ans. Increasing or decreasing.

25. For a sequence $\{a_n\}$ if the ration of successive terms $a_n+1/a_n < 1$ then the sequence is known as --------.

Ans. Decreasing.

26. Use L'Hopital's rule to evaluate the $\lim_{x \to 0} \frac{sin2x}{x}$ .....

Ans. 2.

27. If {-8, 8} is subdivided into '16' equally subintervals, the RIGHT end point if 13^{th} sub-intervals will be --------.

Ans. 4.

28. If y= 3x, then instantaneous rate of change of 'y' w.r.t 'x' at '5' is --------.

Ans. 2

29. 0.121212 is an example of -------.

Ans. Rational numbers.

30. Consider the function defined by f(x) = 2/(x-1) the point of discontinuity is -------.

Ans. X=3.

31. If f(x) = x' (3/2) then f' (1)=
NOTE: x'n means 'x' to the power 'n'.

Ans. 1.

32. Which of the following point satisfies the equation: 2x + 5y =15?

Ans. (5, 1)

33. What is the derivative of sin (20x)?

Ans. 20Cos (20x).

34. What is the derivative of 3sec (x)?

Ans. 3 Sec(x) Tan(x).

35. Which of the following is solution of equation:

$|3x+4| = |2x|$

Ans. Does not exist.

36. Which of the following is distance between the points (2, 5) and (-1, 1)?

Ans. 5.

37. ---------- Of domain must have image in the range under the defined function.

Ans. Each element.

38. L 'Hopital's rule $\lim\frac{f(x)}{g(x)}$ = -------.

Ans. $\lim\frac{f'(x)}{g'(x)}$

39. Arc length of the curve y=7 from x=0 to x=1 is ------.

Ans. 1.

40. Arc length of the curve y=x from x=0 to x=2 is ------.

Ans. $\sqrt[2]{2}$

41. Use L'Hopital's rule to evaluate the $\lim_{x\to 0}\frac{sin2x}{x}$ =

Ans. 2.

42. If the interval [3, 7] is divided into '4' equal subintervals, then left endpoint of each subinterval will be --------.

Ans. 4,5,6,7.

43. Length of the curve y=3x from x=0 to x=1 is -------.

Ans. Sqrt (10)

44. Length of the curve y=4x from x=0 to x=1 is -------.

Ans. Sqrt (17)

45. The value of $\int_0^1 e - x \ dx$

Ans. $\frac{e-1}{e}$

46. Integral of (1-2x) from [0, 1] is -------.

Ans. 0.

47. By the use of L'Hopital's rule the value of

Ans. 2.

48. For a sequence $\{a_n\}$ if the difference between successive terms $a_n + 1 - a_n \leq 0$.

Ans. Non increasing.

49. -------- gives a relation between definite integral and indefinite integral.

Ans. First fundamental theorem of calculus.

50. The value of theorem of f(x) at [k, k-1] is -------.

Ans. $\frac{f(xk)-f\ (xk-1)}{xk-xk-1}=f'(xk)$.

51. Let f is a smooth function on [0, 3] what will be the arc length L of the curve y= f(x) from x=0 and x=3.

Ans. $\int_0^3 \sqrt{1+[f'(x)]^2}\,dy$

52. The volume of the cylindrical shell is given by ----------.

Ans. $(\pi R^2 - \pi r^2)h$.

53.Mathematically second fundamental theorem of calculus can be written as.

$$\frac{d}{dx}\int_a^t f(t)dt = f(x)$$

54.A monotone sequence is either non decreasing or _____.

Non Increasing

55.a sequence is a function whose _____ is the set of positive integers

domain

56.By the use of L'Hopital's rule the value of $\lim_{x\to\infty}\frac{x}{e^x}$

Ans.0

57.The length of the WHOLE polygonal path will be

None of these

$$\sum_{k=1}^{n} L_k = \sum_{k=1}^{n} \sqrt{1+(f'(x_k^*))^2}\,\Delta x_k$$

58.a plane curve (not line) is a curve that lies in a _____ plane.

Two dimensional

59.