

GUJARAT TECHNOLOGICAL UNIVERSITY**DIPLOMA ENGINEERING – SEMESTER-C to D Bridge Course EXAMINATION –Summer- 2019****Subject Code: C320002****Date: 03-06-2019****Subject Name: ADVANCED MATHEMATICS (GROUP-1)****Time: 10:30 AM to 12:00 PM****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make Suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Use of programmable & Communication aids are strictly prohibited.
5. Use of only simple calculator is permitted in Mathematics.
6. English version is authentic.

No. Question Text and Option. પ્રશ્ન અને વિકલ્પો.

- $i+i^2+i^3+i^4=$ _____
1. A. 1 B. 0
C. -1 D. i
- $i+i^2+i^3+i^4=$ _____
૧. A. 1 B. 0
C. -1 D. i
- For complex number $z = 3i - 2$ then $\bar{z} =$ _____
2. A. $3i + 2$ B. $3i - 2$
C. $-3i - 2$ D. Not possible
- સંકર સંખ્યા $z = 3i - 2$ ને $\bar{z} =$ _____
૨. A. $3i + 2$ B. $3i - 2$
C. $-3i - 2$ D. શક્ય નથી.
- If $z = 3 - 3/2i$ then $\text{Im}(z) =$ _____
3. A. 3 B. $-3/2$
C. $3/2$ D. -3
- જો $z = 3 - 3/2i$ ને $\text{Im}(z) =$ _____
૩. A. 3 B. $-3/2$
C. $3/2$ D. -3
- Modulus of $z = (3/5) - i(4/5) =$ _____
4. A. 1 B. $7/5$
C. 5 D. $\sqrt{5}$
- $z = (3/5) - i(4/5)$ ને મોડ્યુલસ = _____
૪. A. 1 B. $7/5$
C. 5 D. $\sqrt{5}$
- If $z = 2\sqrt{3} + 2i$ then $|z| =$ _____
5. A. $4\sqrt{3}$ B. $2\sqrt{3}$
C. 16 D. 4
- જો $z = 2\sqrt{3} + 2i$ હોય તો $|z| =$ _____
૫. A. $4\sqrt{3}$ B. $2\sqrt{3}$
C. 16 D. 4
- If $z_1 = 3 - 2i, z_2 = 2 + 5i$ then $z_1 - z_2 =$ _____
6. A. $1 + 3i$ B. $1 - 7i$
C. $5 - 2i$ D. $3 - i$
- જો $z_1 = 3 - 2i, z_2 = 2 + 5i$ ને $z_1 - z_2 =$ _____
૬. A. $1 + 3i$ B. $1 - 7i$
C. $5 - 2i$ D. $3 - i$

- If $(x + iy) - (2 + 3i) = 2 - 5i$ then $x = \underline{\hspace{1cm}}, y = \underline{\hspace{1cm}}$
7. A. (4,-2) B. (2,-4)
C. (-4,-2) D. (2,4)
- જો $(x + iy) - (2 + 3i) = 2 - 5i$ હોય તો $x = \underline{\hspace{1cm}}, y = \underline{\hspace{1cm}}$
૭. A. (4,-2) B. (2,-4)
C. (-4,-2) D. (2,4)
- If $\bar{z} = \frac{1}{1-i}$ then $z = \underline{\hspace{1cm}}$
8. A. $\frac{1}{1+i}$ B. $1 + i$
C. $1 - i$ D. $2(1 + i)$
- જો $\bar{z} = \frac{1}{1-i}$ હોય તો $z = \underline{\hspace{1cm}}$
૮. A. $\frac{1}{1+i}$ B. $1 + i$
C. $1 - i$ D. $2(1 + i)$
- $\text{Arg}(\sqrt{3} - i) = \underline{\hspace{1cm}}$
9. A. $\frac{\pi}{6}$ B. $-\frac{\pi}{6}$
C. $\frac{5\pi}{6}$ D. $-\frac{5\pi}{6}$
- $\text{Arg}(\sqrt{3} - i) = \underline{\hspace{1cm}}$
૯. A. $\frac{\pi}{6}$ B. $-\frac{\pi}{6}$
C. $\frac{5\pi}{6}$ D. $-\frac{5\pi}{6}$
- Modulus of z is 2 and prin.arg. is $\frac{2\pi}{3}$, so, $z = \underline{\hspace{1cm}}$
10. A. $1 + \sqrt{3}i$ B. $1 + \sqrt{\frac{3}{4}}i$
C. $-1 + \sqrt{3}i$ D. $1 - \sqrt{\frac{3}{4}}i$
- જો z નો મોડ્યુલસ 2 અને પ્રિન્સિપલ આર્ગ્યુમેન્ટ $\frac{2\pi}{3}$ હોય તો $z = \underline{\hspace{1cm}}$
૧૦. A. $1 + \sqrt{3}i$ B. $1 + \sqrt{\frac{3}{4}}i$
C. $-1 + \sqrt{3}i$ D. $1 - \sqrt{\frac{3}{4}}i$
- Polar form of $z = -1 + \sqrt{3}i$ is $\underline{\hspace{1cm}}$.
11. A. $2\left(\cos\frac{\pi}{3} + i\sin\frac{\pi}{3}\right)$ B. $2\left(\cos\frac{\pi}{3} - i\sin\frac{\pi}{3}\right)$
C. $2\left(\cos\frac{2\pi}{3} - i\sin\frac{2\pi}{3}\right)$ D. $2\left(\cos\frac{2\pi}{3} + i\sin\frac{2\pi}{3}\right)$
- $z = -1 + \sqrt{3}i$ નું પોલાર ફોર્મ $= \underline{\hspace{1cm}}$.
૧૧. A. $2\left(\cos\frac{\pi}{3} + i\sin\frac{\pi}{3}\right)$ B. $2\left(\cos\frac{\pi}{3} - i\sin\frac{\pi}{3}\right)$
C. $2\left(\cos\frac{2\pi}{3} - i\sin\frac{2\pi}{3}\right)$ D. $2\left(\cos\frac{2\pi}{3} + i\sin\frac{2\pi}{3}\right)$
- $(\cos 2\theta + i\sin 2\theta) + (\cos 3\theta - i\sin 3\theta) = \underline{\hspace{1cm}}$
12. A. $\cos\theta - i\sin\theta$ B. $\cos 2\theta - i\sin 2\theta$
C. $\cos 5\theta - i\sin 5\theta$ D. 0
- $(\cos 2\theta + i\sin 2\theta) + (\cos 3\theta - i\sin 3\theta) = \underline{\hspace{1cm}}$
૧૨. A. $\cos\theta - i\sin\theta$ B. $\cos 2\theta - i\sin 2\theta$
C. $\cos 5\theta - i\sin 5\theta$ D. 0
- $f(x) = 3x - 2$. then $f(-3) + f(3) = \underline{\hspace{1cm}}$
13. A. 4 B. 0
C. 9 D. -4
- $f(x) = 3x - 2$. હોય તો $f(-3) + f(3) = \underline{\hspace{1cm}}$
૧૩. A. 4 B. 0
C. 9 D. -4
- $f(x) = ax + \frac{1}{x}$ and also, $f\left(\frac{1}{5}\right) = \frac{28}{5}$ then $a = \underline{\hspace{1cm}}$.
14. A. 5 B. 3

- C. 15
D. $3/5$
14. $f(x) = ax + \frac{1}{x}$ અને, $f(\frac{1}{5}) = \frac{28}{5}$ હોય તો $a =$ _____.
- A. 5
B. 3
C. 15
D. $3/5$
15. $f(x) = \log(\cot x)$, then $f(\frac{\pi}{4}) =$ _____
- A. 1
B. e
C. π
D. 0
16. $f(x) = \log(\cot x)$, હોય તો $f(\frac{\pi}{4}) =$ _____
- A. 1
B. e
C. π
D. 0
17. $\lim_{x \rightarrow 2} \frac{x^2 - 4}{x - 2} =$ _____
- A. -2
B. 2
C. 4
D. -4
18. $\lim_{x \rightarrow 2} \frac{x^2 - 4}{x - 2} =$ _____
- A. -2
B. 2
C. 4
D. -4
19. $\lim_{x \rightarrow 0} \frac{1 - \cos x}{x^2} =$ _____
- A. 0
B. 1
C. 2
D. $1/2$
20. $\lim_{x \rightarrow 0} \frac{1 - \cos x}{x^2} =$ _____
- A. 0
B. 1
C. 2
D. $1/2$
21. $\lim_{x \rightarrow 0} \frac{e^{2x} - e^{3x}}{x} =$ _____
- A. -1
B. 2
C. 3
D. 0
22. $\lim_{x \rightarrow 0} \frac{e^{2x} - e^{3x}}{x} =$ _____
- A. -1
B. 2
C. 3
D. 0
23. $\lim_{x \rightarrow 0} \frac{\tan 3x}{7x} =$ _____
- A. $7/3$
B. $3/7$
C. 21
D. 10
24. $\lim_{x \rightarrow 0} \frac{\tan 3x}{7x} =$ _____
- A. $7/3$
B. $3/7$
C. 21
D. 10
25. $\lim_{n \rightarrow \infty} \frac{\sum n}{2n^2} =$ _____
- A. 2
B. $1/2$
C. $1/4$
D. $1/4$
26. $\lim_{n \rightarrow \infty} \frac{\sum n}{2n^2} =$ _____
- A. 2
B. $1/2$
C. $1/4$
D. $1/4$
27. $\lim_{x \rightarrow 0} \frac{\sin^{-1} x}{x} =$ _____
- A. -1
B. 0
C. 1
D. $\frac{\pi}{2}$
28. $\lim_{x \rightarrow 0} \frac{\sin^{-1} x}{x} =$ _____
- A. -1
B. 0
C. 1
D. $\frac{\pi}{2}$

22. $\lim_{x \rightarrow 0} (1 + \frac{2x}{3})^{\frac{3}{x}} =$ _____
 A. e
 C. e^2
 B. $2e$
 D. $e^{1/2}$
22. $\lim_{x \rightarrow 0} (1 + \frac{2x}{3})^{\frac{3}{x}} =$ _____
 A. e
 C. e^2
 B. $2e$
 D. $e^{1/2}$
23. $\lim_{x \rightarrow \infty} x(\sqrt[3]{5} - 1) =$ _____
 A. $\log_e 5$
 C. $\log_5 5$
 B. $\log_e 25$
 D. $\log_e \sqrt{5}$
23. $\lim_{x \rightarrow \infty} x(\sqrt[3]{5} - 1) =$ _____
 A. $\log_e 5$
 C. $\log_5 5$
 B. $\log_e 25$
 D. $\log_e \sqrt{5}$
24. $\lim_{x \rightarrow 1} [\frac{1}{x-1} - \frac{2}{x^2-1}] =$ _____
 A. 0
 C. $1/2$
 B. 1
 D. 2
24. $\lim_{x \rightarrow 1} [\frac{1}{x-1} - \frac{2}{x^2-1}] =$ _____
 A. 0
 C. $1/2$
 B. 1
 D. 2
25. $\lim_{x \rightarrow 3} \frac{x^3 - 81}{x^2 - 9} =$ _____
 A. $2/9$
 C. 27
 B. $9/2$
 D. 81
25. $\lim_{x \rightarrow 3} \frac{x^3 - 81}{x^2 - 9} =$ _____
 A. $2/9$
 C. 27
 B. $9/2$
 D. 81
26. $\frac{d}{dx}(\frac{\sin x}{\cos x}) =$ _____
 A. 0
 C. $-\sec^2 \theta$
 B. $\tan^2 \theta$
 D. $\sec^2 \theta$
26. $\frac{d}{dx}(\frac{\sin x}{\cos x}) =$ _____
 A. 0
 C. $-\sec^2 \theta$
 B. $\tan^2 \theta$
 D. $\sec^2 \theta$
27. $\frac{d}{dx}(x^2 + 2^x + 2^2) =$ _____
 A. $2x + x \cdot 2^{x-1} + 2(2)^{1-1}$
 C. $x^2 + 2^x \log 2 + \log 2$
 B. $2x + 2^x \log 2 + 4$
 D. $2x + 2^x \log 2$
27. $\frac{d}{dx}(x^2 + 2^x + 2^2) =$ _____
 A. $2x + x \cdot 2^{x-1} + 2(2)^{1-1}$
 C. $x^2 + 2^x \log 2 + \log 2$
 B. $2x + 2^x \log 2 + 4$
 D. $2x + 2^x \log 2$
28. $\frac{d}{dx}(\tan^{-1} x + \cot^{-1} x) =$ _____
 A. 0
 C. $\frac{-2}{\sqrt{1-x^2}}$
 B. $\frac{2}{\sqrt{1-x^2}}$
 D. $\frac{1}{1-x^2}$
28. $\frac{d}{dx}(\tan^{-1} x + \cot^{-1} x) =$ _____
 A. 0
 C. $\frac{-2}{\sqrt{1-x^2}}$
 B. $\frac{2}{\sqrt{1-x^2}}$
 D. $\frac{1}{1-x^2}$
29. $\frac{d}{dx}(x \log x) =$ _____
 A. 1
 C. $1 + \log x$
 B. $\log x$
 D. $\frac{x}{\log x}$

29. $\frac{d}{dx}(x \log x) = \underline{\hspace{2cm}}$
- A. 1
B. $\log x$
C. $1 + \log x$
D. $\frac{x}{\log x}$
30. $\frac{d}{dx}(e^{-\log \cos x}) = \underline{\hspace{2cm}}$
- A. $\frac{1}{\sqrt{1-x^2}}$
B. $-\sec x$
C. $\sec x \cdot \tan x$
D. 0
30. $\frac{d}{dx}(e^{-\log \cos x}) = \underline{\hspace{2cm}}$
- A. $\frac{1}{\sqrt{1-x^2}}$
B. $-\sec x$
C. $\sec x \cdot \tan x$
D. 0
31. If $f(x) = \log x^3$ then $f'(3) = \underline{\hspace{2cm}}$
- A. 1
B. 3
C. $1/3$
D. 27
31. જો $f(x) = \log x^3$ હોય તો $f'(3) = \underline{\hspace{2cm}}$
- A. 1
B. 3
C. $1/3$
D. 27
32. $x = at^2$ and $y = 2at$ then $\frac{dy}{dx} = \underline{\hspace{2cm}}$
- A. $1/t$
B. t
C. at
D. a/t
32. $x = at^2$ અને $y = 2at$ હોય તો $\frac{dy}{dx} = \underline{\hspace{2cm}}$
- A. $1/t$
B. t
C. at
D. a/t
33. $\sqrt{x} + \sqrt{y} = \sqrt{9}$ then $\frac{dy}{dx} = \underline{\hspace{2cm}}$
- A. $\sqrt{\frac{y}{x}}$
B. $-\sqrt{\frac{x}{y}}$
C. $-\sqrt{\frac{y}{x}}$
D. $\sqrt{\frac{x}{y}}$
33. $\sqrt{x} + \sqrt{y} = \sqrt{9}$ હોય તો $\frac{dy}{dx} = \underline{\hspace{2cm}}$
- A. $\sqrt{\frac{y}{x}}$
B. $-\sqrt{\frac{x}{y}}$
C. $-\sqrt{\frac{y}{x}}$
D. $\sqrt{\frac{x}{y}}$
34. $xy + x + y = 7$ then $\frac{dy}{dx} = \underline{\hspace{2cm}}$
- A. $\frac{y+1}{x+1}$
B. $\frac{y-1}{x-1}$
C. $-\frac{y+1}{x+1}$
D. $\frac{x-1}{x+1}$
34. $xy + x + y = 7$ હોય તો $\frac{dy}{dx} = \underline{\hspace{2cm}}$
- A. $\frac{y+1}{x+1}$
B. $\frac{y-1}{x-1}$
C. $-\frac{y+1}{x+1}$
D. $\frac{x-1}{x+1}$
35. If $f(x) = \log(\sqrt{1+x^2})$ then $f'(1) = \underline{\hspace{2cm}}$
- A. 2
B. 1
C. $\sqrt{2}$
D. $1/2$
35. જો $f(x) = \log(\sqrt{1+x^2})$ હોય તો $f'(1) = \underline{\hspace{2cm}}$
- A. 2
B. 1
C. $\sqrt{2}$
D. $1/2$
36. If $s = t^3 + 3t^2 + 7$, then at $t = 1$ sec acceleration = unit
- A. 6
B. 36
C. 12
D. 21
36. જો $s = t^3 + 3t^2 + 7$, તો $t = 1$ sec પર તેની પ્રવેગ એકમ થાય.

- A. 6
C. 12
- B. 36
D. 21

If $s = 2t^3 - 9t^2 + 12t + 5$ then velocity become zero at $t =$ _____ sec.

37. A. 2,1
C. 1,-2
- B. 1,3
D. 1,2

જો $s = 2t^3 - 9t^2 + 12t + 5$ નો વેગ શૂન્ય હોય તો t _____ સેકન્ડ થાય.

38. A. 2,1
C. 1,-2
- B. 1,3
D. 1,2

If $y = e^{3x}$ then $\frac{d^2y}{dx^2} =$ _____

38. A. $6e^{3x}$
C. $9e^{3x}$
- B. $3e^{3x}$
D. e^{3x}

જો $y = e^{3x}$ હોય તો $\frac{d^2y}{dx^2} =$ _____

39. A. $6e^{3x}$
C. $9e^{3x}$
- B. $3e^{3x}$
D. e^{3x}

$\frac{d}{da}(\tan^{-1} a) =$ _____

39. A. $\frac{1}{1+a^2}$
C. $\frac{1}{\sqrt{1+a^2}}$
- B. $\frac{1}{1-a^2}$
D. $-\frac{1}{\sqrt{1+a^2}}$

$\frac{d}{da}(\tan^{-1} a) =$ _____

39. A. $\frac{1}{1+a^2}$
C. $\frac{1}{\sqrt{1+a^2}}$
- B. $\frac{1}{1-a^2}$
D. $-\frac{1}{\sqrt{1+a^2}}$

Maxima value of the function $x^3 - 3x + 11$ is _____

40. A. 9
C. -13
- B. 13
D. -9

$x^3 - 3x + 11$ ની મહત્તમ કિંમત _____ છે.

40. A. 9
C. -13
- B. 13
D. -9

$\int 3x^2 dx =$ _____ + c.

41. A. x^3
C. $6x^2$
- B. $2x^3$
D. $6x$

$\int 3x^2 dx =$ _____ + c.

41. A. x^3
C. $6x^2$
- B. $2x^3$
D. $6x$

$\int 4^x dx =$ _____ + c.

42. A. $4^x \log 4$
C. $\frac{4^x}{\log 4}$
- B. 4^x
D. $\frac{x 4^x}{\log 4}$

$\int 4^x dx =$ _____ + c.

42. A. $4^x \log 4$
C. $\frac{4^x}{\log 4}$
- B. 4^x
D. $\frac{x 4^x}{\log 4}$

$\int \frac{dx}{x^2 + 36} =$ _____ + c

43. A. $\frac{1}{3} \tan^{-1}(\frac{x}{6})$
C. $\frac{1}{9} \tan^{-1}(\frac{x}{6})$
- B. $\frac{1}{6} \tan^{-1}(\frac{x}{6})$
D. $\frac{1}{36} \tan^{-1}(\frac{x}{6})$

$\int \frac{dx}{x^2 + 36} =$ _____ + c

43. A. $\frac{1}{3} \tan^{-1}(\frac{x}{6})$
C. $\frac{1}{9} \tan^{-1}(\frac{x}{6})$
- B. $\frac{1}{6} \tan^{-1}(\frac{x}{6})$
D. $\frac{1}{36} \tan^{-1}(\frac{x}{6})$

$\int \frac{dx}{e^x + e^{-x}} =$ _____ + c.

44. A. $\tan^{-1}(x)$
C. $\tan^{-1}(e^{2x})$
- B. $\tan^{-1}(x^e)$
D. $\tan^{-1}(e^x)$

- $\int \frac{dx}{e^x + e^{-x}} = \underline{\hspace{2cm}} + c.$
 44. A. $\tan^{-1}(x)$ B. $\tan^{-1}(x^e)$
 C. $\tan^{-1}(e^{2x})$ D. $\tan^{-1}(e^x)$
 $\int e^x \sin e^x dx = \underline{\hspace{2cm}} + c.$
 45. A. $-\csc e^x$ B. $\csc e^x$
 C. $-\sin e^x$ D. $\sin e^x$
 $\int e^x \sin e^x dx = \underline{\hspace{2cm}} + c.$
 44. A. $-\csc e^x$ B. $\csc e^x$
 C. $-\sin e^x$ D. $\sin e^x$
 $\int \frac{\cos(\log x)}{x} dx = \underline{\hspace{2cm}} + c.$
 46. A. $\sin e^x$ B. $\csc e^x$
 C. $-\sin(\log x)$ D. $\sin(\log x)$
 $\int \frac{\cos(\log x)}{x} dx = \underline{\hspace{2cm}} + c.$
 45. A. $\sin e^x$ B. $\csc e^x$
 C. $-\sin(\log x)$ D. $\sin(\log x)$
 $\int e^x \sin x dx = \underline{\hspace{2cm}} + c.$
 47. A. $e^x(\sin x + \cos x)$ B. $e^x(\sin x - \cos x)$
 C. $e^x/2(\sin x + \cos x)$ D. $e^x/2(\sin x - \cos x)$
 $\int e^x \sin x dx = \underline{\hspace{2cm}} + c.$
 48. A. $e^x(\sin x + \cos x)$ B. $e^x(\sin x - \cos x)$
 C. $e^x/2(\sin x + \cos x)$ D. $2e^x(\sin x - \cos x)$
 $\int_1^e \log x dx = \underline{\hspace{2cm}}$
 48. A. e B. 1
 C. -1 D. 0
 $\int_1^e \log x dx = \underline{\hspace{2cm}}$
 47. A. e B. 1
 C. -1 D. 0
 $\int_0^{\frac{\pi}{2}} \frac{\sin x}{\sin x + \cos x} dx = \underline{\hspace{2cm}}$
 49. A. 1 B. $\frac{\pi}{2}$
 C. $\frac{\pi}{4}$ D. $\frac{\pi}{6}$
 $\int_0^{\frac{\pi}{2}} \frac{\sin x}{\sin x + \cos x} dx = \underline{\hspace{2cm}}$
 48. A. 1 B. $\frac{\pi}{2}$
 C. $\frac{\pi}{4}$ D. $\frac{\pi}{6}$
 $\int_0^1 \frac{2}{x^2+1} dx = \underline{\hspace{2cm}}$
 50. A. $\frac{\pi}{2}$ B. $\frac{\pi}{6}$
 C. $\frac{\pi}{6}$ D. π
 $\int_0^1 \frac{2}{x^2+1} dx = \underline{\hspace{2cm}}$
 49. A. $\frac{\pi}{2}$ B. $\frac{\pi}{6}$
 C. $\frac{\pi}{6}$ D. π
 $\int_0^{\frac{\pi}{2}} \frac{\sin 4x}{\sin x} dx = \underline{\hspace{2cm}}$
 51. A. $\frac{\pi}{2}$ B. 1
 C. 0 D. π
 $\int_0^{\frac{\pi}{2}} \frac{\sin 4x}{\sin x} dx = \underline{\hspace{2cm}}$
 49. A. $\frac{\pi}{2}$ B. 1
 C. 0 D. π

52. Area of region bounded by curve $y^2 = 4x$ and line $x = 3$ is _____

A. $4\sqrt{3}$

B. $8\sqrt{3}$

C. $16\sqrt{3}$

D. $6\sqrt{3}$

વક્ર $y^2 = 4x$ તથા રેખા $x = 3$ દ્વારા ઘેરાયેલા પ્રદેશનું ક્ષેત્રફળ _____ થાય.

૫૨.

A. $4\sqrt{3}$

B. $8\sqrt{3}$

C. $16\sqrt{3}$

D. $6\sqrt{3}$

$$\int \frac{\sin x + \cos x}{\sqrt{1 + \sin 2x}} dx = \text{_____} + c.$$

53.

A. x

B. 1

C. $x^2/2$

D. $\sin x - \cos x$

$$\int \frac{\sin x + \cos x}{\sqrt{1 + \sin 2x}} dx = \text{_____} + c.$$

૫૩.

A. x

B. 1

C. $x^2/2$

D. $\sin x - \cos x$

$$\int \frac{dx}{\sqrt{16 - 9x^2}} = \text{_____} + c.$$

54.

A. $\frac{1}{4} \sin^{-1} \frac{3x}{4}$

B. $\sin^{-1} \frac{3x}{4}$

C. $\frac{1}{3} \sin^{-1} \frac{3x}{4}$

D. $\frac{1}{4} \sin^{-1} 3x$

$$\int \frac{dx}{\sqrt{16 - 9x^2}} = \text{_____} + c.$$

૫૪.

A. $\frac{1}{4} \sin^{-1} \frac{3x}{4}$

B. $\sin^{-1} \frac{3x}{4}$

C. $\frac{1}{3} \sin^{-1} \frac{3x}{4}$

D. $\frac{1}{4} \sin^{-1} 3x$

$$\frac{d}{dx}(\sin^3 x) = \text{_____}$$

55.

A. $3\sin^2 x \cos x$

B. $\cos^3 x$

C. $3x^2 \cos^2 x$

D. $3 \cos^3 x$

$$\frac{d}{dx}(\sin^3 x) = \text{_____}$$

૫૫.

A. $3\sin^2 x \cos x$

B. $\cos^3 x$

C. $3x^2 \cos^2 x$

D. $3 \cos^3 x$

$$\lim_{x \rightarrow 0} \frac{e^x + \tan x - 1}{x} = \text{_____}$$

56.

A. 1

B. -1

C. -2

D. 2

$$\lim_{x \rightarrow 0} \frac{e^x + \tan x - 1}{x} = \text{_____}$$

૫૬.

A. 1

B. -1

C. -2

D. 2

$$\lim_{x \rightarrow -1} \frac{x^{2009} + 1}{x^{2011} + 1} = \text{_____}$$

57.

A. $2009/2011$

B. $2011/2009$

C. $2029/2001$

D. $2006/2009$

$$\lim_{x \rightarrow -1} \frac{x^{2009} + 1}{x^{2011} + 1} = \text{_____}$$

૫૭.

A. $2009/2011$

B. $2011/2009$

C. $2029/2001$

D. $2006/2009$

$$f(x) = \frac{1}{1+x} \text{ then } f(x) + f\left(\frac{1}{x}\right) = \text{_____}$$

58.

A. -1

B. 0

C. x^2

D. 1

$$f(x) = \frac{1}{1+x} \text{ તો } f(x) + f\left(\frac{1}{x}\right) = \text{_____}$$

૫૮.

A. -1

B. 0

C. x^2

D. 1

$$\text{Order of Diff. equation } \sqrt{\frac{d^2 y}{dx^2}} = 3\sqrt{\frac{dy}{dx}} \text{ is } \text{_____}.$$

59.

A. 1

B. 3

C. 2

D. 0

$$\sqrt{\frac{d^2 y}{dx^2}} = 3\sqrt{\frac{dy}{dx}} \text{ વિકલ સમીકરણની કક્ષા} = \text{_____}.$$

૫૯.

- A. 1
C. 2
- B. 3
D. 0

60. Degree of $\sqrt{\frac{d^2y}{dx^2}} = 3\sqrt{\frac{dy}{dx}}$ is _____.

- A. 3
C. 1
- B. 2
D. 1/2

૬૦. $\sqrt{\frac{d^2y}{dx^2}} = 3\sqrt{\frac{dy}{dx}}$ વિકલ સમીકરણ નું પરિમાણ = _____.

- A. 3
C. 1
- B. 2
D. 1/2

Solution of D.E. $\frac{dy}{dx} = \frac{y}{x}$ is _____.

61. A. $y = \frac{c}{x}$
C. $\log y = cx$
- B. $y = c \log x$
D. $y = c x$

સમીકરણ $\frac{dy}{dx} = \frac{y}{x}$ નો ઉકેલ _____ થાય.

૬૧. A. $y = \frac{c}{x}$
C. $\log y = cx$
- B. $y = c \log x$
D. $y = c x$

Integrating factor of $\frac{dy}{dx} + \frac{2y}{x} = e^x$ is _____.

62. A. x^2
C. e^{x^2}
- B. e^x
D. $2x$

સમીકરણ $\frac{dy}{dx} + \frac{2y}{x} = e^x$ નો સંકલ્પકારક અવયવ = _____

૬૨. A. x^2
C. e^{x^2}
- B. e^x
D. $2x$

Integrating factor of $x \log x \frac{dy}{dx} + y = 2 \log x$ is _____.

63. A. $e^{\log x}$
C. $(\log x)^2$
- B. $\log(\log x)$
D. $\log x$

સમીકરણ $x \log x \frac{dy}{dx} + y = 2 \log x$ નો સંકલ્પકારક અવયવ = _____

૬૩. A. $e^{\log x}$
C. $(\log x)^2$
- B. $\log(\log x)$
D. $\log x$

Solution of D.E. $\frac{dy}{dx} = y \cot x, y\left(\frac{\pi}{6}\right) = 1$ is _____.

64. A. $Y = 2 \sin x$
C. $Y = \frac{1}{2} \tan x$
- B. $Y = 2 \cos x$
D. $Y = \frac{1}{2} \cot x$

વિકલ સમી. $\frac{dy}{dx} = y \cot x, y\left(\frac{\pi}{6}\right) = 1$ નો ઉકેલ = _____.

૬૪. A. $Y = 2 \sin x$
C. $Y = \frac{1}{2} \tan x$
- B. $Y = 2 \cos x$
D. $Y = \frac{1}{2} \cot x$

Solution of d.e. $y(1+x)dx + x(1+y)dy = 0$ is _____.

65. A. $x + y + xy$
C. $x + y + \log xy$
- B. $\log x + \log y + xy$
D. $\log xy$

વિકલ સમી. $y(1+x)dx + x(1+y)dy = 0$ નો ઉકેલ = _____

૬૫. A. $x + y + xy$
C. $x + y + \log xy$
- B. $\log x + \log y + xy$
D. $\log xy$

D.E. of the solution $\frac{x}{a} + \frac{y}{b} = 1$ is _____.

66. A. $\frac{d^2y}{dx^2} = 0$
C. $\left(\frac{dy}{dx}\right)^2 = 0$
- B. $\frac{dy}{dx} = 0$
D. Not possible

$\frac{x}{a} + \frac{y}{b} = 1$ ઉકેલ ધરાવતું વિકલ સમીકરણ _____ થાય.

૬૬. A. $\frac{d^2y}{dx^2} = 0$
C. $\left(\frac{dy}{dx}\right)^2 = 0$
- B. $\frac{dy}{dx} = 0$
D. શક્ય નથી.

67. $(3 - 4i)^2$ modulus of given complex number is _____
A. 12
- B. 25

- C. 97 D. 2
 $(3 - 4i)^2$ સંકરસંખ્યા નું માનક મૂલ્ય _____ છે.
 ૬૭. A. 12 B. 25
 C. 97 D. 2
 Square root of $(5 - 12i)$ is _____
 68. A. $\pm(3 + 2i)$ B. $\pm(2 - 3i)$
 C. $\pm(3 - 2i)$ D. $\pm(2 + 3i)$
 $(5 - 12i)$ નું વર્ગમૂળ _____ થાય.
 ૬૮. A. $\pm(3 + 2i)$ B. $\pm(2 - 3i)$
 C. $\pm(3 - 2i)$ D. $\pm(2 + 3i)$
 $1^2 + 2^2 + 3^2 + 4^2 + \dots + 20^2 =$ _____
 69. A. 7280 B. 210
 C. 430 D. 2870
 $1^2 + 2^2 + 3^2 + 4^2 + \dots + 20^2 =$ _____
 ૬૯. A. 7280 B. 210
 C. 430 D. 2870
 If $y = \sin x \cdot \cos x$ then $dy/dx =$ _____
 70. A. $\cos 2x$ B. $\sin 2x$
 C. $\cos x - \sin x$ D. $\sin x - \cos x$
 જો $y = \sin x \cdot \cos x$ હોય તો $dy/dx =$ _____
 ૭૦. A. $\cos 2x$ B. $\sin 2x$
 C. $\cos x - \sin x$ D. $\sin x - \cos x$
