

Seat No. / Enrolment No.:

GUJARAT TECHNOLOGICAL UNIVERSITY
Diploma Engineering – SEMESTER – 2(CtoD) New – EXAMINATION – Summer-2024

Subject Code: C4320001

Date: 11-06-2024

Subject Name: Applied Mathematics

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 non-programmable scientific calculator is permitted.
6. English version is authentic.
7. Use only OMR to answer this question paper.

No. Question Text and Option. પ્રશ્ન અને વિકલ્પો.

If $A = \begin{bmatrix} 3 & 5 \\ 1 & 2 \\ -1 & 0 \end{bmatrix}$ then $A^T = \underline{\hspace{2cm}}$.

1. A. $\begin{bmatrix} 3 & 1 & -1 \\ 5 & 2 & 0 \end{bmatrix}$ B. $\begin{bmatrix} 3 & 1 & 1 \\ 5 & 2 & 0 \end{bmatrix}$
C. $\begin{bmatrix} -3 & 1 & -1 \\ 5 & -2 & 0 \end{bmatrix}$ D. $\begin{bmatrix} 3 & 1 & -1 \\ -5 & -2 & 0 \end{bmatrix}$

$A = \begin{bmatrix} 3 & 5 \\ 1 & 2 \\ -1 & 0 \end{bmatrix}$ માટે $A^T = \underline{\hspace{2cm}}$.

૧. A. $\begin{bmatrix} 3 & 1 & -1 \\ 5 & 2 & 0 \end{bmatrix}$ B. $\begin{bmatrix} 3 & 1 & 1 \\ 5 & 2 & 0 \end{bmatrix}$
C. $\begin{bmatrix} -3 & 1 & -1 \\ 5 & -2 & 0 \end{bmatrix}$ D. $\begin{bmatrix} 3 & 1 & -1 \\ -5 & -2 & 0 \end{bmatrix}$

If order of matrix A is 3×4 then order of A^T is ____.

2. A. 3×4 B. 2×3
C. 4×3 D. 3×2

શ્રેણિકની A ની કક્ષા 3×4 હોય તો શ્રેણિકની A^T ની કક્ષા ____ થશે.

૨. A. 3×4 B. 2×3
C. 4×3 D. 3×2

3. If order of matrix is 1×3 then it has ____ elements.

- A. 2 B. 3

- C. 6 D. 12
શ્રેણિકની કક્ષા 1×3 હોય તો તેમાં કુલ ___ ઘટકો હોય.
3. A. 2 B. 3
C. 6 D. 12
- Order of the matrix $A = \begin{bmatrix} 4 & -3 & 1 \\ 1 & 4 & 0 \end{bmatrix}$ is ____.
4. A. 3×3 B. 3×2
C. 2×2 D. 2×3
- $A = \begin{bmatrix} 4 & -3 & 1 \\ 1 & 4 & 0 \end{bmatrix}$ હોય તો A નો ક્રમ (કક્ષા/પ્રકાર) ____ છે.
૪. A. 3×3 B. 3×2
C. 2×2 D. 2×3
- Mean for the first ten natural numbers is ____.
5. A. 6.5 B. 6
C. 5.5 D. 5
- પ્રથમ દસ પ્રાકૃતિક સંખ્યાઓ નો મધ્યક ____ થાય.
૫. A. 6.5 B. 6
C. 5.5 D. 5
- Standard deviation of 8,8,8,8,8 is ____.
6. A. 1 B. 2
C. 8 D. 0
- 8,8,8,8,8 નું પ્રમાણિત વિચલન ____ થાય.
૬. A. 1 B. 2
C. 8 D. 0
- Mean deviation of 6,7,6,7, 6,7, 6,7, 6,7 is ____.
7. A. 2 B. 0.5
C. 3 D. 1
- 6,7,6,7, 6,7, 6,7, 6,7 નું સરેરાશ વિચલન ____ થાય.
૭. A. 2 B. 0.5
C. 3 D. 1
- If mean of 5,7,k, 7,8,6,8,4 is 7 then $k =$ ____.
8. A. 11 B. 9
C. 10 D. 8
- અવલોકનો 5,7,k, 7,8,6,8,4 નો મધ્યક 7 હોય તો $k =$ ____.
૮. A. 11 B. 9
C. 10 D. 8
- $\frac{dy}{dx}(2\sqrt{x}) =$ ____.
9. A. $\sqrt{x}$ B. $2\sqrt{x}$
C. $\frac{1}{\sqrt{x}}$ D. $\frac{1}{2\sqrt{x}}$
- $\frac{dy}{dx}(2\sqrt{x}) =$ ____.
૯. A. $\sqrt{x}$ B. $2\sqrt{x}$

C. $\frac{1}{\sqrt{x}}$

D. $\frac{1}{2\sqrt{x}}$

10. $\frac{d}{dt}(t) = \underline{\hspace{1cm}}$.

A. 0

B. 5

C. 1

D. 7

૧૦. $\frac{d}{dt}(t) = \underline{\hspace{1cm}}$.

A. 0

B. 5

C. 1

D. 7

11. $\int_{-3}^3 x \, dx = \underline{\hspace{1cm}}$.

A. 4

B. 2

C. 1

D. 0

૧૧. $\int_{-3}^3 x \, dx = \underline{\hspace{1cm}}$.

A. 4

B. 2

C. 1

D. 0

12. Order of the differential equation $\left(\frac{d^2y}{dx^2}\right)^2 - 2\frac{dy}{dx} + 3y = \sin x$ is ____.

A. 1

B. 2

C. 3

D. 4

૧૨. વિકલ સમીકરણ $\left(\frac{d^2y}{dx^2}\right)^2 - 2\frac{dy}{dx} + 3y = \sin x$ ની કક્ષા ____ છે.

A. 1

B. 2

C. 3

D. 4

For $A = \begin{bmatrix} 5 & 2 \\ 4 & 3 \end{bmatrix}$, $A + A = \underline{\hspace{1cm}}$.

13. A. $\begin{bmatrix} 10 & 4 \\ 8 & 6 \end{bmatrix}$

B. $\begin{bmatrix} -10 & 4 \\ 8 & 6 \end{bmatrix}$

C. $\begin{bmatrix} -10 & -4 \\ -8 & -6 \end{bmatrix}$

D. $\begin{bmatrix} 10 & -4 \\ -8 & 6 \end{bmatrix}$

$A = \begin{bmatrix} 5 & 2 \\ 4 & 3 \end{bmatrix}$ માટે $A + A = \underline{\hspace{1cm}}$

૧૩. A. $\begin{bmatrix} 10 & 4 \\ 8 & 6 \end{bmatrix}$

B. $\begin{bmatrix} -10 & 4 \\ 8 & 6 \end{bmatrix}$

C. $\begin{bmatrix} -10 & -4 \\ -8 & -6 \end{bmatrix}$

D. $\begin{bmatrix} 10 & -4 \\ -8 & 6 \end{bmatrix}$

14. If $\begin{bmatrix} x & 2 \\ 1 & -1 \end{bmatrix} = \begin{bmatrix} 3 & 2 \\ 1 & y \end{bmatrix}$ then $x = \underline{\hspace{1cm}}$ and $y = \underline{\hspace{1cm}}$.

- A. $x = 3$ and $y = 1$ B. $x = 3$ and $y = 1$
 C. $x = 3$ and $y = -1$ D. $x = 3$ and $y = 0$

જો $\begin{bmatrix} x & 2 \\ 1 & -1 \end{bmatrix} = \begin{bmatrix} 3 & 2 \\ 1 & y \end{bmatrix}$ તો $x = \underline{\hspace{1cm}}$ અને $y = \underline{\hspace{1cm}}$.

૧૪. A. $x = 3$ and $y = 1$ B. $x = 3$ and $y = 1$
 C. $x = 3$ and $y = -1$ D. $x = 3$ and $y = 0$

If $f(x) = 8x^2 - 3x + 7$ then $f'(1) = \underline{\hspace{1cm}}$.

15. A. 12 B. 13
 C. -7 D. 5

જો $f(x) = 8x^2 - 3x + 7$ તો $f'(1) = \underline{\hspace{1cm}}$.

૧૫. A. 12 B. 13
 C. -7 D. 5

If mean of observations 11, x, 19, 21, y, 29 is 20 then $x + y = \underline{\hspace{1cm}}$

16. A. 20 B. 30
 C. 50 D. 40

અવલોકનો 11, x, 19, 21, y, 29 નો મધ્યક 20 હોય તો $x + y = \underline{\hspace{1cm}}$

૧૬. A. 20 B. 30
 C. 50 D. 40

Mean of 1, 2, 5, 6, 7, 11 is $\underline{\hspace{1cm}}$.

17. A. $32/7$ B. $16/3$
 C. $33/7$ D. $24/11$

અવલોકનો 1, 2, 5, 6, 7, 11 નો મધ્યક $\underline{\hspace{1cm}}$ થશે.

૧૭. A. $32/7$ B. $16/3$
 C. $33/7$ D. $24/11$

If A is non singular matrix then $\underline{\hspace{1cm}}$.

18. A. $A = A^T$ B. $|A| = 0$
 C. $|A| \neq 0$ D. $A = -A^T$

જો A સામાન્ય શ્રેણિક હોય તો $\underline{\hspace{1cm}}$.

૧૮. A. $A = A^T$ B. $|A| = 0$
 C. $|A| \neq 0$ D. $A = -A^T$

If $A = \begin{bmatrix} 0 & 1 \\ 1 & 0 \end{bmatrix}$ and $B = \begin{bmatrix} 0 & 3 \\ 0 & 1 \end{bmatrix}$ then $AB = \underline{\hspace{1cm}}$.

19. A. $\begin{bmatrix} 0 & 1 \\ 0 & 3 \end{bmatrix}$ B. $\begin{bmatrix} 0 & 3 \\ 2 & 0 \end{bmatrix}$
 C. $\begin{bmatrix} 0 & 1 \\ 3 & 0 \end{bmatrix}$ D. $\begin{bmatrix} 0 & 3 \\ 0 & 1 \end{bmatrix}$

૧૯. જો $A = \begin{bmatrix} 0 & 1 \\ 1 & 0 \end{bmatrix}$ અને $B = \begin{bmatrix} 0 & 3 \\ 0 & 1 \end{bmatrix}$ હોય તો $AB = \underline{\hspace{1cm}}$.

A. $\begin{bmatrix} 0 & 1 \\ 0 & 3 \end{bmatrix}$
 C. $\begin{bmatrix} 0 & 1 \\ 3 & 0 \end{bmatrix}$

B. $\begin{bmatrix} 0 & 3 \\ 2 & 0 \end{bmatrix}$
 D. $\begin{bmatrix} 0 & 3 \\ 0 & 1 \end{bmatrix}$

If $A = \begin{bmatrix} -1 & 0 \end{bmatrix}$ and $B = \begin{bmatrix} -4 \\ 1 \end{bmatrix}$ then $AB = \underline{\hspace{2cm}}$.

20. A. $\begin{bmatrix} -1 & 0 \\ 2 & 4 \end{bmatrix}$
 C. $\begin{bmatrix} 4 \end{bmatrix}$

B. $\begin{bmatrix} 0 & -4 \\ 0 & 1 \end{bmatrix}$
 D. $\begin{bmatrix} 8 \end{bmatrix}$

જો $A = \begin{bmatrix} -1 & 0 \end{bmatrix}$ અને $B = \begin{bmatrix} -4 \\ 1 \end{bmatrix}$ તો $AB = \underline{\hspace{2cm}}$.

૨૦. A. $\begin{bmatrix} -1 & 0 \\ 2 & 4 \end{bmatrix}$
 C. $\begin{bmatrix} 4 \end{bmatrix}$

B. $\begin{bmatrix} 0 & -4 \\ 0 & 1 \end{bmatrix}$
 D. $\begin{bmatrix} 8 \end{bmatrix}$

$\begin{bmatrix} 1 & 1 \\ 1 & 0 \end{bmatrix} + \begin{bmatrix} 1 & 3 \\ 0 & 1 \end{bmatrix} = \underline{\hspace{2cm}}$

21. A. $\begin{bmatrix} 2 & 4 \\ 1 & 1 \end{bmatrix}$
 C. $\begin{bmatrix} 2 & 4 \\ 1 & 0 \end{bmatrix}$

B. $\begin{bmatrix} 2 & 4 \\ 0 & 1 \end{bmatrix}$
 D. $\begin{bmatrix} 2 & 0 \\ 1 & 0 \end{bmatrix}$

$\begin{bmatrix} 1 & 1 \\ 1 & 0 \end{bmatrix} + \begin{bmatrix} 1 & 3 \\ 0 & 1 \end{bmatrix} = \underline{\hspace{2cm}}$

૨૧. A. $\begin{bmatrix} 2 & 4 \\ 1 & 1 \end{bmatrix}$
 C. $\begin{bmatrix} 2 & 4 \\ 1 & 0 \end{bmatrix}$

B. $\begin{bmatrix} 2 & 4 \\ 0 & 1 \end{bmatrix}$
 D. $\begin{bmatrix} 2 & 0 \\ 1 & 0 \end{bmatrix}$

Mean deviation of 45, 57, 48, 52, 58 is ____.

22. A. 52
 C. 53

B. 4.6
 D. 4.4

અવલોકનો 45, 57, 48, 52, 58 નો સરેરાશ વિચલન ____ થાય.

૨૨. A. 52
 C. 53

B. 4.6
 D. 4.4

$y = \log x$ then $\frac{dy}{dx} = \underline{\hspace{2cm}}$.

23. A. $\frac{1}{2x}$
 C. x

B. $\frac{1}{x}$
 D. 0

૨૩. $y = \log x$ માટે $\frac{dy}{dx} = \underline{\hspace{2cm}}$.

A. $\frac{1}{2x}$

B. $\frac{1}{x}$

C. x

D. 0

24. Degree of the differential equation $\left(\frac{d^2y}{dx^2}\right)^3 - 5\frac{dy}{dx} + 6y = 0$ is ____.

A. 1

B. 2

C. 3

D. 4

૨૪. ઢિઢલ સમીકરણ $\left(\frac{d^2y}{dx^2}\right)^3 - 5\frac{dy}{dx} + 6y = 0$ ની પઢિમાણ ____ છે.

A. 1

B. 2

C. 3

D. 4

For $A = \begin{bmatrix} 1 & 1 \\ 2 & 3 \end{bmatrix}$, $2A =$ ____.

25. A. $\begin{bmatrix} 1 & 1 \\ 0 & 3 \end{bmatrix}$

B. $\begin{bmatrix} 1 & 1 \\ 2 & 3 \end{bmatrix}$

C. $\begin{bmatrix} 2 & 2 \\ 0 & 6 \end{bmatrix}$

D. $\begin{bmatrix} 2 & 2 \\ 4 & 6 \end{bmatrix}$

$A = \begin{bmatrix} 1 & 1 \\ 2 & 3 \end{bmatrix}$ મ્લે $2A =$ ____

૨૫. A. $\begin{bmatrix} 1 & 1 \\ 0 & 3 \end{bmatrix}$

B. $\begin{bmatrix} 1 & 1 \\ 2 & 3 \end{bmatrix}$

C. $\begin{bmatrix} 2 & 2 \\ 0 & 6 \end{bmatrix}$

D. $\begin{bmatrix} 2 & 2 \\ 4 & 6 \end{bmatrix}$

26. $x = 2\cos\theta + 5, y = 2\sin\theta + 3$ then $\frac{dy}{dx} =$ ____.

A. $-\cot\theta$

B. $2\cot\theta$

C. $\tan\theta$

D. $2\tan\theta$

૨૬. $x = 2\cos\theta + 5, y = 2\sin\theta + 3$ મ્લે $\frac{dy}{dx} =$ ____.

A. $-\cot\theta$

B. $2\cot\theta$

C. $\tan\theta$

D. $2\tan\theta$

27. $\frac{d}{dx}(\tan^{-1}x + \cot^{-1}x) =$ ____.

A. 0

B. 1

C. $\frac{-1}{1-x^2}$

D. $\frac{1}{1-x^2}$

૨૭. $\frac{d}{dx}(\tan^{-1}x + \cot^{-1}x) =$ ____

A. 0

B. 1

C. $\frac{-1}{1-x^2}$

D. $\frac{1}{1-x^2}$

28. $\frac{d}{dx}[\log(3x+1)] = \underline{\hspace{1cm}}.$
- A. $\frac{1}{3x+1}$ B. $\frac{3}{3x+1}$
C. $3x+1$ D. x
૨૮. $\frac{d}{dx}[\log(3x+1)] = \underline{\hspace{1cm}}.$
- A. $\frac{1}{3x+1}$ B. $\frac{3}{3x+1}$
C. $3x+1$ D. x
29. Degree of the differential equation $\frac{dy}{dx} + y = e^x$ is $\underline{\hspace{1cm}}.$
- A. 0 B. 2
C. 1 D. 3
૨૯. વિકલ સમીકરણ $\frac{dy}{dx} + y = e^x$ નું પરિમાણ $\underline{\hspace{1cm}}$ છે.
- A. 0 B. 2
C. 1 D. 3
30. $\frac{d}{dx}(\log 4) = \underline{\hspace{1cm}}.$
- A. 4 B. 0
C. $\frac{1}{4}$ D. $\frac{1}{8}$
૩૦. $\frac{d}{dx}(\log 4) = \underline{\hspace{1cm}}.$
- A. 4 B. 0
C. $\frac{1}{4}$ D. $\frac{1}{8}$
31. Find the mean for the first five odd numbers is $\underline{\hspace{1cm}}.$
- A. 2 B. 1
C. 5 D. 3
૩૧. પ્રથમ પાંચ અયુગ્મ સંખ્યાઓ નો મધ્યક $\underline{\hspace{1cm}}$ થાય.
- A. 2 B. 1
C. 5 D. 3
32. If $f(x) = 3^x$ then $f'(1) = \underline{\hspace{1cm}}.$
- A. 0 B. $\log 3$
C. $3 \log 3$ D. 4
૩૨. જો $f(x) = 3^x$ તો $f'(1) = \underline{\hspace{1cm}}.$
- A. 0 B. $\log 3$
C. $3 \log 3$ D. 4
33. $\frac{d}{dx} \cos(2x-3) = \underline{\hspace{1cm}}.$
- A. $2 \sin(2x-3)$ B. $-2 \sin(2x-3)$
C. $2 \cos(2x-3)$ D. $\cos(2x-3)$

33. $\frac{d}{dx} \cos(2x-3) = \underline{\hspace{2cm}}$.
 A. $2 \sin(2x-3)$ B. $-2 \sin(2x-3)$
 C. $2 \cos(2x-3)$ D. $\cos(2x-3)$
34. Degree of the differential equation $\cos\left(\frac{dy}{dx}\right) + 2y = 0$ is _____.
 A. 1 B. 2
 C. 0 D. Not defined
35. વિકલ સમીકરણ $\cos\left(\frac{dy}{dx}\right) + 2y = 0$ નું પરિમાણ _____ થશે.
 A. 1 B. 2
 C. 0 D. વ્યાખ્યાયિત નથી.
36. $\frac{d}{dx}(56) = \underline{\hspace{2cm}}$.
 A. 55 B. 54
 C. 0 D. 53
37. $\frac{d}{dx}(56) = \underline{\hspace{2cm}}$.
 A. 55 B. 54
 C. 0 D. 53
38. Find the mean for the first seven even numbers is _____.
 A. 7 B. 8
 C. 8.5 D. 9.5
39. પ્રથમ સાત યુગ્મ સંખ્યાઓ નો મધ્યક _____ થાય.
 A. 7 B. 8
 C. 8.5 D. 9.5
40. $f(x)$ has maxima at $x = a$ if _____.
 A. $f'(a) = 0, f''(a) = 0$ B. $f'(a) = 0, f''(a) > 0$
 C. $f'(a) > 0, f''(a) < 0$ D. $f'(a) = 0, f''(a) < 0$
41. $f(x)$ ને $x = a$ પાસે મહત્તમ મુલ્ય હશે જો _____ થાય.
 A. $f'(a) = 0, f''(a) = 0$ B. $f'(a) = 0, f''(a) > 0$
 C. $f'(a) > 0, f''(a) < 0$ D. $f'(a) = 0, f''(a) < 0$
42. For $y = e^x, \frac{d^2y}{dx^2} = \underline{\hspace{2cm}}$.
 A. e^x B. 1
 C. 0 D. e
43. $y = e^x$ માટે $\frac{d^2y}{dx^2} = \underline{\hspace{2cm}}$.
 A. e^x B. 1
 C. 0 D. e
44. Equation of the motion of moving particle is given by $s = 3t^2 - 2t + 8$, then velocity at $t = 1$ seconds is _____.
 A. 2 units B. 1 units

C. 4 units D. 6 units

એક ગતિ કરતા કણનું સમીકરણ $s = 3t^2 - 2t + 8$ છે, $t = 1$ સેકન્ડે તેનો વેગ ____ હશે.

3૯. A. 2 એકમ B. 1 એકમ
C. 4 એકમ D. 6 એકમ

Equation of the motion of moving particle is given by $s = 3t^2 - 2t + 8$, then acceleration at $t = 2$ seconds is ____.

40. A. 2 units B. 0 units
C. 4 units D. 6 units

એક ગતિ કરતા કણનું સમીકરણ $s = 3t^2 - 2t + 8$ છે, $t = 2$ સેકન્ડે તેનો પ્રવેગ ____ હશે.

૪૦. A. 2 એકમ B. 0 એકમ
C. 4 એકમ D. 6 એકમ

$\int \sec^2 x \, dx = \underline{\hspace{2cm}}.$

41. A. $\tan x + c$ B. $\sec x + \tan x + c$
C. $\sec x + c$ D. $\sec x \cdot \tan x + c$

$\int \sec^2 x \, dx = \underline{\hspace{2cm}}.$

૪૧. A. $\tan x + c$ B. $\sec x + \tan x + c$
C. $\sec x + c$ D. $\sec x \cdot \tan x + c$

$\int \frac{1}{1+x^2} \, dx = \underline{\hspace{2cm}}.$

42. A. $\cos^{-1} x + c$ B. $\sin^{-1} x + c$
C. $\tan^{-1} x + c$ D. $\cot^{-1} x + c$

$\int \frac{1}{1+x^2} \, dx = \underline{\hspace{2cm}}.$

૪૨. A. $\cos^{-1} x + c$ B. $\sin^{-1} x + c$
C. $\tan^{-1} x + c$ D. $\cot^{-1} x + c$

Area of the region bounded by the curves $y = x$, $x = 0$ and $x = 2$ is ____.

43. A. 4 B. 1
C. 0 D. 2

વક્રો $y = x$, $x = 0$ અને $x = 2$ થી ઘેરાયેલા પ્રદેશ નું ક્ષેત્રફલ ____ થશે.

૪૩. A. 4 B. 1
C. 0 D. 2

$\int (\sin^2 \theta + \cos^2 \theta) \, d\theta = \underline{\hspace{2cm}} + c$

44. A. 0 B. 1
C. θ D. x

$\int (\sin^2 \theta + \cos^2 \theta) \, d\theta = \underline{\hspace{2cm}} + c$

૪૪. A. 0 B. 1
C. θ D. x

Degree of the differential equation $\left(\frac{d^2 y}{dx^2}\right)^2 + \left(\frac{dy}{dx}\right)^3 + 3y = 0$ is ____.

45. A. 3 B. 2
C. 4 D. 1

૪૫. વિકલ સમીકરણ $\left(\frac{d^2y}{dx^2}\right)^2 + \left(\frac{dy}{dx}\right)^3 + 3y = 0$ ની પરિમાણ ____ છે.

- A. 3
C. 4
B. 2
D. 1

$$\int e^{3x} dx = \text{---} + c.$$

46. A. e^{3x}
C. $\frac{e^{3x}}{3}$
B. $3e^{3x}$
D. $3e^{2x}$

$$\int e^{3x} dx = \text{---} + c$$

૪૬. A. e^{3x}
C. $\frac{e^{3x}}{3}$
B. $3e^{3x}$
D. $3e^{2x}$

$$x=10t, y=5t^2 \text{ then } \frac{dy}{dx} = \text{---}.$$

47. A. t
C. $5t$
B. t^2
D. 0

$$x=10t, y=5t^2 \text{ માટે } \frac{dy}{dx} = \text{---}.$$

૪૭. A. t
C. $5t$
B. t^2
D. 0

$$\int_0^1 \frac{8}{1+x^2} dx = \text{---}.$$

48. A. 0
C. $\frac{\pi}{4}$
B. 2π
D. $\frac{\pi}{2}$

$$\int_0^1 \frac{8}{1+x^2} dx = \text{---}.$$

૪૮. A. 0
C. $\frac{\pi}{4}$
B. 2π
D. $\frac{\pi}{2}$

$$\int \frac{1}{x-6} dx = \text{---} + c.$$

49. A. $\log(x)$
C. $x-6$
B. $\log|x-6|$
D. $x-6$

$$\int \frac{1}{x-6} dx = \text{---} + c.$$

૪૯. A. $\log(x)$
C. $x-6$
B. $\log|x-6|$
D. $x-6$

To find $\int f(x)dx$, for which function given below we have to use the rule of integration

50. by parts?
A. $f(x) = e^x$
B. $f(x) = x^2 - 4$

C. $f(x) = \sin x$

D. $f(x) = xe^x$

$\int f(x)dx$ શોધવા માટે નીચેનામાંથી કયા વિધેય માટે ખંડશઃ સંકલન નો નિયમનો ઉપયોગ કરવો પડે?

૫૦.

A. $f(x) = e^x$

B. $f(x) = x^2 - 4$

C. $f(x) = \sin x$

D. $f(x) = xe^x$

Formula for the standard deviation of grouped data is ____.

51.

A. $S = \sqrt{\frac{\sum f_i (x_i - \bar{x})^2}{n}}$

B. $S = \sqrt{\frac{\sum f_i (x_i - \bar{x})^2}{n}}$

C. $S = \sqrt{\sum f_i (x_i - \bar{x})^2}$

D. $S = \sqrt{\frac{\sum (x_i - \bar{x})^2}{n}}$

વર્ગીકૃત માહિતીના પ્રમાણિત વિચલનનું સુત્ર ____ છે.

૫૧.

A. $S = \sqrt{\frac{\sum f_i (x_i - \bar{x})^2}{n}}$

B. $S = \sqrt{\frac{\sum f_i (x_i - \bar{x})^2}{n}}$

C. $S = \sqrt{\sum f_i (x_i - \bar{x})^2}$

D. $S = \sqrt{\frac{\sum (x_i - \bar{x})^2}{n}}$

Let be I an identity matrix then $(I)^2 =$ ____.

52.

A. $2I$

B. $-I$

C. I

D. 0

જો I એ એકમ શ્રેણિક હોય તો $(I)^2 =$ ____.

૫૨.

A. $2I$

B. $-I$

C. I

D. 0

$\int (\cos x - \sin x) dx = \text{____} + c.$

53.

A. $\cos x - \sin x$

B. $-\sin x + \cos x$

C. $\cos x$

D. $\sin x + \cos x$

$\int (\cos x - \sin x) dx = \text{____} + c.$

૫૩.

A. $\cos x - \sin x$

B. $-\sin x + \cos x$

C. $\cos x$

D. $\sin x + \cos x$

$\int x^3 dx = \text{____} + c.$

54.

A. $\frac{x}{4}$

B. $\frac{x^4}{4}$

C. $3x^2$

D. $4x^3$

$\int x^3 dx = \text{____} + c.$

૫૪.

A. $\frac{x}{4}$

B. $\frac{x^4}{4}$

C. $3x^2$

D. $4x^3$

The mean deviation for continuous variable and grouped data of n observation is ____.

55. A. $\delta\bar{x} = \frac{1}{n} \sum f_i |x_i - \bar{x}|$ B. $\delta\bar{x} = \frac{1}{n} \sum f_i |x_i - \bar{x}| \times c$
 C. $\delta\bar{x} = \frac{1}{n} \sum |x_i - \bar{x}| \times c$ D. $\delta\bar{x} = \frac{1}{n} \sum |x_i - \bar{x}|$

સતત અને વર્ગીકૃત માહિતી ના સરેરાશ વિચલન નું સુત્ર ____ થાય.

૫૫. A. $\delta\bar{x} = \frac{1}{n} \sum f_i |x_i - \bar{x}|$ B. $\delta\bar{x} = \frac{1}{n} \sum f_i |x_i - \bar{x}| \times c$
 C. $\delta\bar{x} = \frac{1}{n} \sum |x_i - \bar{x}| \times c$ D. $\delta\bar{x} = \frac{1}{n} \sum |x_i - \bar{x}|$

$$\int e^x dx = \text{____} + c.$$

56. A. x B. $\sin x$
 C. e^x D. $\log |x|$

$$\int e^x dx = \text{____} + c.$$

૫૬. A. x B. $\sin x$
 C. e^x D. $\log |x|$

Mean for the first four prime numbers is ____.

57. A. 4.25 B. 6
 C. 4.5 D. 4

પ્રથમચાર અવિભાજ્ય સંખ્યાઓનોમધ્યક ____ થાય.

૫૭. A. 4.25 B. 6
 C. 4.5 D. 4

$$\int \tan x dx = \text{____} + c.$$

58. A. $\sec x$ B. $\sec x \cdot \tan x$
 C. $\log |\sec x|$ D. $\log |\cos x|$

$$\int \tan x dx = \text{____} + c.$$

૫૮. A. $\sec x$ B. $\sec x \cdot \tan x$
 C. $\log |\sec x|$ D. $\log |\cos x|$

For any matrices A and B, $(AB)^T = \text{____}$.

59. A. $A^T B^T$ B. $B^T A^T$
 C. I D. 0

કોઈપણશ્રેણિકોA અનેB માટે $(AB)^T = \text{____}$.

૫૯. A. $A^T B^T$ B. $B^T A^T$
 C. I D. 0

If A is of order 3×2 and B is of order 2×1 then for matrix A+B ____.

60. A. order is 3×1 B. order is 1×3
 C. is not possible D. order is 1×2

શ્રેણિકA નોક્રમ 3×2 અનેB નોક્રમ 2×1 હોયતોશ્રેણિકA+B ____

૬૦. A. નોક્રમ 3×1 થાય B. નોક્રમ 1×3 થાય

C. નમળે

D. નોક્રમ 1×2 થાય

$$\int (2x+3+2) dx = \text{_____} + c.$$

61. A. $x^2 + 5x$

B. $x^2 + 5x^2$

C. $\frac{1}{2}$

D. $(2x-3)^2$

$$\int (2x+3+2) dx = \text{_____} + c.$$

૬૧. A. $x^2 + 5x$

B. $x^2 + 5x^2$

C. $\frac{1}{2}$

D. $(2x-3)^2$

Which is a solution of differential equation $\frac{dy}{dx} + y = 0$

62. A. $\sin x$

B. 1

C. $\cos x$

D. e^{-x}

નીચેનામાંથી કયું વિધેય વિકલ સમીકરણ $\frac{dy}{dx} - y = 0$ નું ઉકેલ થશે?

૬૨. A. $\sin x$

B. 1

C. $\cos x$

D. e^{-x}

Solution of differential equation $2xdx + 2ydy = 0$ is _____.

63. A. $x + y = c$

B. $x^2 + y^2 = c$

C. $xy = c$

D. $x^2 - y^2 = c$

વિકલ સમીકરણ $2xdx + 2ydy = 0$ નો ઉકેલ _____ છે.

૬૩. A. $x + y = c$

B. $x^2 + y^2 = c$

C. $xy = c$

D. $x^2 - y^2 = c$

Which is a differential equation from given equations?

64. A. $x + y = 3$

B. $x^2 + y^2 = c$

C. $\frac{dy}{dx} - y = 0$

D. $x - \sin x = 0$

નીચેના માંથી કયું સમીકરણ એ વિકલ સમીકરણ છે?

૬૪. A. $x + y = 3$

B. $x^2 + y^2 = c$

C. $\frac{dy}{dx} - y = 0$

D. $x - \sin x = 0$

If $\begin{bmatrix} x-3 & 1 \end{bmatrix} = \begin{bmatrix} 2 & y-1 \end{bmatrix}$ then $x = \text{_____}$, $y = \text{_____}$.

65. A. $3, 1$

B. $1, 2$

C. $5, 2$

D. $1, 1$

જો $\begin{bmatrix} x-3 & 1 \end{bmatrix} = \begin{bmatrix} 2 & y-1 \end{bmatrix}$ હોય તો $x = \text{_____}$, $y = \text{_____}$.

૬૫. A. $3, 1$

B. $1, 2$

C. $5, 2$

D. $1, 1$

Solution of differential equation $ydx = xdy$ is _____.

66. A. $x - y = c$

B. $x^2 - y^2 = c$

C. $x^2 + y^2 = c$

D. $y = cx$

વિકલ સમીકરણ $ydx = xdy$ નો ઉકેલ _____ છે.

૬૬.

A. $x - y = c$

B. $x^2 - y^2 = c$

C. $x^2 + y^2 = c$

D. $y = cx$

$[6 \ 0] + [0 \ 6] = \underline{\hspace{2cm}}$

67.

A. $[6 \ 1]$

B. $[12 \ 12]$

C. $[12]$

D. $[6 \ 6]$

$[6 \ 0] + [0 \ 6] = \underline{\hspace{2cm}}$

૬૭.

A. $[6 \ 1]$

B. $[12 \ 12]$

C. $[12]$

D. $[6 \ 6]$

Formula for solving linear differential equation $y(I.F) = \int Q(x) \cdot \underline{\hspace{2cm}} dx + c$ is given by

68.

$y(I.F) = \int \underline{\hspace{2cm}} \cdot (I.F) dx + c$.

A. $P(x)$

B. $Q(x)$

C. $I.F$

D. $xP(x)$

સુરેખ વિકલ સમીકરણ $\frac{dy}{dx} + P(x)y = Q(x)$ નો ઉકેલ $y(I.F) = \int Q(x) \cdot \underline{\hspace{2cm}} dx + c$ છે.

૬૮.

A. $P(x)$

B. $Q(x)$

C. $I.F$

D. $xP(x)$

Integrating factor (I.F.) of $\frac{dy}{dx} + y \tan x = 1$ differential equation is _____.

69.

A. $\sec x$

B. $\cot x$

C. 0

D. $\sin x$

વિકલ સમીકરણ $\frac{dy}{dx} + y \tan x = 1$ નો સંકલ્પકારક અવયવ _____ છે.

૬૯.

A. $\sec x$

B. $\cot x$

C. 0

D. $\sin x$

Integrating factor (I.F.) of differential equation $\frac{dy}{dx} + \frac{y}{x} = x^3$ is _____.

70.

A. x^3

x

C. 1

$2x$

વિકલ સમીકરણ $\frac{dy}{dx} + \frac{y}{x} = x^3$ નો સંકલ્પકારક અવયવ _____ છે.

૭૦.

A. x^3

B. x

C. 1

D. $2x$
