

# Gujarat Technological University

## Diploma Engineering C to D Bridge Course Examination

**Subject Code: C320003****Date: 01/01/2016****Subject Name: Advance Mathematics (Group-2)****Time: 10:30 AM TO 12:00 PM****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumption wherever necessary.
3. Each question is of 1 mark.
4. Use of SIMPLE CALCULATOR is permissible. (Scientific/Higher Version not allowed)
5. English version is authentic.

No. Question Text and Option. પ્રશ્ન અને વિકલ્પો.

The distance between the points (2,3) and (3,4) is \_\_\_\_\_

- |               |                  |
|---------------|------------------|
| 1. A. 2       | B. 1             |
| C. $\sqrt{2}$ | D. None of above |

બે બિંદુઓ (2,3) અને (3,4) વચ્ચે નું અંતર \_\_\_\_\_

- |               |               |
|---------------|---------------|
| 2. A. 2       | B. 1          |
| C. $\sqrt{2}$ | D. એક પણ નહીં |

Mid-point of *line segment AB* is M(5,-2) and A(2,-7) then co-ordinate of B is

- |           |                  |
|-----------|------------------|
| 2. _____. | B. (8,3)         |
| A. (0,8)  | D. None of above |
| C. (0,3)  |                  |

જો  $\overline{AB}$  નું મધ્ય બિંદુ M(5,-2) હોય તથા A(2,-7) હોય, તો B ના યામ \_\_\_\_\_

- |             |               |
|-------------|---------------|
| 2. A. (0,8) | B. (8,3)      |
| C. (0,3)    | D. એક પણ નહીં |

If the vertices of a parallelogram are (3,-4), (x,0), (-6,5) and (-2,y) respectively, then  
x = \_\_\_\_\_ and y = \_\_\_\_\_

- |              |           |
|--------------|-----------|
| 3. A. (-1,1) | B. (1,-1) |
| C. (2,1)     | D. (1,2)  |

સમાંતરબાજુ ચતુસકોણ ના શિરોબિંદુઓ અનુક્રમે (3,-4), (x,0), (-6,5) અને (-2,y), તો

- |                            |           |          |
|----------------------------|-----------|----------|
| 3. x = _____ અને y = _____ | B. (1,-1) |          |
| A. (-1,1)                  | C. (2,1)  | D. (1,2) |
| D. (1,2)                   |           |          |

If a straight line l makes an angle of  $120^\circ$  with positive direction of X- axis then slope  
m = \_\_\_\_\_

- |                            |                  |
|----------------------------|------------------|
| 4. A. $\frac{1}{\sqrt{3}}$ | B. $\sqrt{3}$    |
| C. $-\sqrt{3}$             | D. None Of Above |

સુરેખા | X-અક્ષ સાથે  $120^\circ$  નો ખૂણો બનાવે તો સુરેખા નો ફાળ m = \_\_\_\_\_

- |                            |               |
|----------------------------|---------------|
| 8. A. $\frac{1}{\sqrt{3}}$ | B. $\sqrt{3}$ |
| C. $-\sqrt{3}$             | D. એક પણ નહીં |

5. Y- intercept of line  $3x - 5y + 8 = 0$  is \_\_\_\_\_

- A.  $\frac{-8}{5}$   
C.  $\frac{8}{3}$

- B.  $\frac{8}{5}$   
D.  $\frac{-8}{3}$

રેખા  $3x - 5y + 8 = 0$  નો ચાંતાખંડ \_\_\_\_\_

- A.  $\frac{-8}{5}$   
C.  $\frac{8}{3}$

- B.  $\frac{8}{5}$   
D.  $\frac{-8}{3}$

The slope of line passing through the points A(-3,5) and B(2,-4) is \_\_\_\_\_

- A.  $\frac{-9}{5}$   
C. 5

- B.  $\frac{-5}{9}$   
D. None Of Above

બિંદુઓ A(-3,5) અને B(2,-4) માથી પસાર થતી રેખા નો ફાળ \_\_\_\_\_

- A.  $\frac{-9}{5}$   
C. 5

- B.  $\frac{-5}{9}$   
D. એક પણ નહીં

The angle between two straight lines  $x+y=0$  and  $x-y=0$  is \_\_\_\_\_

- A.  $\frac{-\pi}{2}$   
C.  $\pi$

- B.  $\frac{\pi}{2}$   
D. None Of Above

રેખાઓ  $x+y=0$  અને  $x-y=0$  વચ્ચે નો ખૂણો \_\_\_\_\_ છે

- A.  $\frac{-\pi}{2}$   
C.  $\pi$

- B.  $\frac{\pi}{2}$   
D. એક પણ નહીં

Two lines  $l_1$  and  $l_2$  are parallel if their slopes become \_\_\_\_\_

- A.  $m_1 \neq m_2$   
C.  $m_1 * m_2 = 1$

- B.  $m_1 * m_2 = -1$   
D.  $m_1 = m_2$

એ રેખાઓ  $l_1$  અને  $l_2$  સમાંતર હોય તો તેમનો ફાળ \_\_\_\_\_ થાય

- A.  $m_1 \neq m_2$   
C.  $m_1 * m_2 = 1$

- B.  $m_1 * m_2 = -1$   
D.  $m_1 = m_2$

Perpendicular distance between two parallel lines  $l_1: ax + by + c_1 = 0$  and  $l_2: ax + by + c_2 = 0$  is \_\_\_\_\_

- A.  $p = \frac{|ax_1 + by_1 + c_1|}{\sqrt{a^2 + b^2}}$   
C.  $d = \frac{|c_1 - c_2|}{\sqrt{a^2 + b^2}}$

- B.  $p = \frac{|c_1|}{\sqrt{a^2 + b^2}}$   
D. None Of Above

એ સમાંતર રેખાઓ  $l_1: ax + by + c_1 = 0$  અને  $l_2: ax + by + c_2 = 0$  વચ્ચે નું લંબઅંતર

- E. \_\_\_\_\_ છે.  
A.  $p = \frac{|ax_1 + by_1 + c_1|}{\sqrt{a^2 + b^2}}$   
C.  $d = \frac{|c_1 - c_2|}{\sqrt{a^2 + b^2}}$

- B.  $p = \frac{|c_1|}{\sqrt{a^2 + b^2}}$   
D. એક પણ નહીં

Equation of circle having centre (0,0) and radius 3 is \_\_\_\_\_

- A.  $x^2 + y^2 = 9$   
C.  $x^2 + y^2 + 3 = 0$

- B.  $x^2 + y^2 = 3$   
D.  $x^2 + y^2 = -9$

કેંદ્ર (0,0) અને ત્રિજ્યા 3 હોય એવા વર્તુળ નું સમીક્ષરણ \_\_\_\_\_ છે

- A.  $x^2 + y^2 = 9$   
C.  $x^2 + y^2 + 3 = 0$

- B.  $x^2 + y^2 = 3$   
D.  $x^2 + y^2 = -9$

11. For Circle  $x^2 + y^2 + 8x + 6y = 0$ , centre is \_\_\_\_\_.  
A. (4,3) B. (-4,-3)

- C. (8,6) D. (-8,-6)

અર્થાત  $x^2 + y^2 + 8x + 6y = 0$  માટે કેન્દ્ર \_\_\_\_\_ છે.

૧૧. A. (4,3) B. (-4,-3)  
C. (8,6) D. (-8,-6)

Equation of tangent at point (-6,4) on circle  $x^2 + y^2 = 52$  is \_\_\_\_\_.

૧૨. A.  $3x - 2y + 26 = 0$  B.  $-3x - 2y + 26 = 0$   
C.  $2x + 3y = 0$  D. None Of Above

અર્થાત  $x^2 + y^2 = 52$  પરના બિંદુ (-6,4) આગામી વર્તુળના સ્પર્શકનું સમીકરણ \_\_\_\_\_ છે.

૧૩. A.  $3x - 2y + 26 = 0$  B.  $-3x - 2y + 26 = 0$   
C.  $2x + 3y = 0$  D. એક પણ નહીં

Slope of line  $ax + by + c = 0$  is \_\_\_\_\_.

૧૪. A.  $\frac{b}{a}$  B.  $\frac{-c}{a}$   
C.  $\frac{a}{-c}$  D.  $\frac{-a}{b}$

રેખા  $ax + by + c = 0$  નો ફેરા \_\_\_\_\_ છે

૧૫. A.  $\frac{b}{a}$  B.  $\frac{-c}{a}$   
C.  $\frac{a}{-c}$  D.  $\frac{-a}{b}$

If the points (4,2), (7,x) and (a,7) are co-linear points then  $x =$  \_\_\_\_\_.

૧૬. A. 2 B. 5  
C. 0 D. None Of Above

જો બિંદુઓ (4,2), (7,x) અને (a,7) સમર્થેખ હોય તો  $x =$  \_\_\_\_\_.

૧૭. A. 2 B. 5  
C. 0 D. એક પણ નહીં

If  $f(x) = 2^x$  then  $f(4) - f(3) =$  \_\_\_\_\_.

૧૮. A. 5 B. 0  
C. 8 D. None Of Above

જો  $f(x) = 2^x$  ત્થા  $f(4) - f(3) =$  \_\_\_\_\_.

૧૯. A. 5 B. 0  
C. 8 D. એક પણ નહીં

If  $f(x) = \sin x$  then  $f\left(\frac{\pi}{2} - x\right) =$  \_\_\_\_\_.

૨૦. A.  $\cos x$  B.  $-\sin x$   
C.  $\tan x$  D.  $-\cos x$

જો  $f(x) = \sin x$  ત્થા  $f\left(\frac{\pi}{2} - x\right) =$  \_\_\_\_\_.

૨૧. A.  $\cos x$  B.  $-\sin x$   
C.  $\tan x$  D.  $-\cos x$

If  $f(x) = e^x$  then  $f(0) =$  \_\_\_\_\_.

૨૨. A. 0 B. 1  
C.  $\frac{1}{e}$  D. e

જો  $f(x) = e^x$  ત્થા  $f(0) =$  \_\_\_\_\_.

૨૩. A. 0 B. 1

- C.  $\frac{1}{e}$   
 $\lim_{h \rightarrow 0} \frac{a^h - 1}{h} = \text{_____}.$
- D. e
18. A. 1  
C.  $\log_a e$   
 $\lim_{h \rightarrow 0} \frac{a^h - 1}{h} = \text{_____}.$
- B.  $\log_e a$   
D. None Of Above
19. A. 0  
C. 9  
 $\lim_{n \rightarrow \infty} \frac{5n^2 + 3n + 1}{n^2} = \text{_____}.$
- B. 5  
D. 3
20. A.  $\frac{13}{7}$   
C.  $\frac{3}{4}$   
 $\lim_{x \rightarrow 2} \frac{x^3 + 5}{5x + 3} = \text{_____}.$
- B. 1  
D.  $\frac{7}{13}$
20. A.  $\frac{13}{7}$   
C.  $\frac{3}{4}$   
 $\lim_{x \rightarrow 2} \frac{x^3 + 5}{5x + 3} = \text{_____}.$
- B. 1  
D.  $\frac{7}{13}$
21. A. m  
C.  $\frac{m}{n}$   
 $\lim_{\theta \rightarrow 0} \frac{\sin m\theta}{\sin n\theta} = \text{_____}.$
- B. 0  
D. None Of Above
21. A. m  
C.  $\frac{m}{n}$   
 $\lim_{\theta \rightarrow 0} \frac{\sin m\theta}{\sin n\theta} = \text{_____}.$
- B. 0  
D. None Of Above
22. A. 1  
C. n  
 $\lim_{n \rightarrow \infty} \frac{1}{n} = \text{_____}.$
- B. 0  
D. e
22. A. 1  
C. n  
 $\lim_{n \rightarrow \infty} \frac{1}{n} = \text{_____}.$
- B. 0  
D. e
23. A.  $\log_e 6$   
C.  $\log_e 3$   
 $\lim_{x \rightarrow 0} \frac{6^x - 2^x}{x} = \text{_____}.$
- B.  $\log_e 2$   
D.  $\log_3 e$
23. A.  $\log_e 6$   
C.  $\log_e 3$   
 $\lim_{x \rightarrow 0} \frac{6^x - 2^x}{x} = \text{_____}.$
- B.  $\log_e 2$   
D.  $\log_3 e$

$$\lim_{x \rightarrow 0} \left(1 + \frac{5x}{7}\right)^{\frac{2}{x}} = \text{_____}.$$

24. A.  $e^{\frac{10}{7}}$   
 C.  $\frac{1}{e}$
- B.  $e^{\frac{7}{10}}$   
 D. 0

$$\lim_{x \rightarrow 0} \left(1 + \frac{5x}{7}\right)^{\frac{2}{x}} = \text{_____}.$$

28. A.  $e^{\frac{10}{7}}$   
 C.  $\frac{1}{e}$
- B.  $e^{\frac{7}{10}}$   
 D. 0

If  $f(x) = 2x + 1$  and  $g(x) = x^2 - 2$  then  $(fog)(x) = \text{_____}$ .

25. A.  $2x + 1$   
 C.  $2x^2 - 3$
- B.  $2x^2 + 3$   
 D. Impossible

જે  $f(x) = 2x + 1$  અને  $g(x) = x^2 - 2$  તો  $(fog)(x) = \text{_____}$ .

24. A.  $2x + 1$   
 C.  $2x^2 - 3$
- B.  $2x^2 + 3$   
 D. અશક્ય

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

26. A.  $\frac{1}{2}$   
 C. 3
- B. 2  
 D. 0

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

25. A.  $\frac{1}{2}$   
 C. 3
- B. 2  
 D. 0

If  $f(x) = \sin x$  then  $f' \left(\frac{\pi}{2}\right) = \text{_____}$ .

27. A. 0  
 C. -1
- B. 1  
 D.  $\pi$

જે  $f(x) = \sin x$  તો  $f' \left(\frac{\pi}{2}\right) = \text{_____}$ .

29. A. 0  
 C. -1
- B. 1  
 D.  $\pi$

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

28. A.  $-\cos 3x$   
 C.  $3\cos x - \cos^3 x$
- B.  $3 \cos 3x$   
 D.  $\sin 3x$

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

27. A.  $-\cos 3x$   
 C.  $3\cos x - \cos^3 x$

$$\frac{d}{dx} (3^{4x}) = \text{_____}.$$

29. A.  $4 * 3^{4x} * \log_e 3$   
 C.  $\log_e 3$
- B.  $3^{4x}$   
 D. None Of Above

$$\frac{d}{dx} (3^{4x}) = \text{_____}.$$

26. A.  $4 * 3^{4x} * \log_e 3$   
 C.  $\log_e 3$
- B.  $3^{4x}$   
 D. એક પણ નાંની

$$30. \frac{d}{dx} (e^{-\log x}) = \text{_____}.$$

- A.  $\frac{1}{x}$   
 C.  $\frac{1}{x^2}$   
 $\frac{d}{dx}(e^{-\log x}) = \text{_____}.$
30. A.  $\frac{1}{x}$   
 C.  $\frac{1}{x^2}$   
 $\frac{d}{dx} \log(\sin x) = \text{_____}.$
31. A. cosec  $x$   
 C.  $-\cot x$   
 $\frac{d}{dx} \log(\sin x) = \text{_____}.$
32. A.  $\frac{1}{x^2+a^2}$   
 C.  $\frac{a^2}{x^2+a^2}$   
 $\frac{d}{dx} \tan^{-1}\left(\frac{x}{a}\right) = \text{_____}.$
33. A.  $\frac{1}{x^2+a^2}$   
 C.  $\frac{a^2}{x^2+a^2}$   
 $\frac{d}{dx} \tan^{-1}\left(\frac{x}{a}\right) = \text{_____}.$
34. A.  $\frac{1}{x^2+a^2}$   
 C.  $\frac{a^2}{x^2+a^2}$   
 $\frac{d}{dx} (\cos x^\circ) = \text{_____}.$
35. A.  $-\cos x^\circ$   
 C.  $-\sin x^\circ$   
 $\frac{d}{dx} (\cos x^\circ) = \text{_____}.$
36. A.  $-\cos x^\circ$   
 C.  $-\sin x^\circ$   
 $\frac{d}{dx} (\cosec^2 x - \cot^2 x) = \text{_____}.$
37. A. 1  
 C.  $\sec x - \tan x$   
 $\frac{d}{dx} (\cosec^2 x - \cot^2 x) = \text{_____}.$
38. A. 1  
 C.  $\sec x - \tan x$   
 If  $xy = 1$  then  $\frac{dy}{dx} = \text{_____}.$
39. A.  $\frac{-y}{x}$   
 C.  $\frac{x}{y}$   
 $\frac{d}{dx} xy = 1 \Rightarrow \frac{dy}{dx} = \text{_____}.$
40. A.  $\frac{-y}{x}$   
 C.  $\frac{x}{y}$   
 If  $x = \sin \theta$  and  $y = \cos \theta$  then  $\frac{dy}{dx} = \text{_____}.$

- A.  $\tan \theta$   
 C.  $-\cot \theta$   
 D.  $\cot \theta$

જો  $x = \sin \theta$  અને  $y = \cos \theta$  તો  $\frac{dy}{dx} = \underline{\hspace{2cm}}$ .

35. A.  $\tan \theta$   
 B.  $-\tan \theta$   
 C.  $-\cot \theta$   
 D.  $\cot \theta$

Minimum value of  $f(x) = x \log_e x$  is  $\underline{\hspace{2cm}}$ .

37. A.  $\frac{1}{e}$   
 B.  $e$   
 C.  $\frac{-1}{e}$   
 D. None Of Above

$f(x) = x \log_e x$  ની ન્યૂનતમ કિંમત  $\underline{\hspace{2cm}}$  છે.

39. A.  $\frac{1}{e}$   
 B.  $e$   
 C.  $\frac{-1}{e}$   
 D. એક પણ નહિ

Equation of moving particle  $s = t^3 + 3t$  then velocity (v) at time  $t = 0$  is  $\underline{\hspace{2cm}}$ .

38. A. 4 cm/sec  
 B. 0  
 C. 3 cm/sec  
 D. None Of Above

ગતિ કરતાં કણ નું સમીકરણ  $s = t^3 + 3t$  છે તો  $t = 0$  આગળ તેનો વેગ  $v = \underline{\hspace{2cm}}$

આપું.

36. A. 4 સેમી/સેકન્ડ  
 B. 0  
 C. 3 સેમી/સેકન્ડ  
 D. એક પણ નહિ

$\frac{d}{dx} (\cot x) = \underline{\hspace{2cm}}.$

39. A.  $\operatorname{cosec}^2 x$   
 B.  $\sin^2 x$   
 C.  $\sec^2 x$   
 D. None Of Above

$\frac{d}{dx} (\cot x) = \underline{\hspace{2cm}}.$

36. A.  $\operatorname{cosec}^2 x$   
 B.  $\sin^2 x$   
 C.  $\sec^2 x$   
 D. એક પણ નહિ

If  $y = \sin x$  then  $\frac{d^2y}{dx^2} = \underline{\hspace{2cm}}.$

40. A.  $y$   
 B.  $\sin x$   
 C.  $-\sin x$   
 D. -y

જો  $y = \sin x$  તો  $\frac{d^2y}{dx^2} = \underline{\hspace{2cm}}.$

40. A.  $y$   
 B.  $\sin x$   
 C.  $-\sin x$   
 D. -y

If  $y = e^{4x}$  then  $\frac{d^2y}{dx^2} = \underline{\hspace{2cm}}.$

41. A.  $e^{4y}$   
 B. 4y  
 C. 16y  
 D. None Of Above

જો  $y = e^{4x}$  તો  $\frac{d^2y}{dx^2} = \underline{\hspace{2cm}}.$

41. A.  $e^{4y}$   
 B. 4y  
 C. 16y  
 D. એક પણ નહિ

If  $f(x) = \log \sqrt{x^2 + 1}$  then  $f'(0) = \underline{\hspace{2cm}}.$

42. A. 2  
 B. 1  
 C. 0  
 D.  $\sqrt{2}$

જો  $f(x) = \log \sqrt{x^2 + 1}$  તો  $f'(0) = \underline{\hspace{2cm}}.$

42. A. 2  
 B. 1  
 C. 0  
 D.  $\sqrt{2}$

- If  $x = at^2$  and  $y = 2at$  then  $\frac{dy}{dx} = \underline{\hspace{2cm}}$ .
43. A.  $t$       B.  $\frac{1}{t}$   
           C.  $at$       D.  $\frac{a}{t}$
- જે  $x = at^2$  અને  $y = 2at$  તો  $\frac{dy}{dx} = \underline{\hspace{2cm}}$ .
૪૩. A.  $t$       B.  $\frac{1}{t}$   
           C.  $at$       D.  $\frac{a}{t}$
- $\frac{d}{dx} (\cos^3 x) = \underline{\hspace{2cm}}$ .
44. A.  $\sin^3 x$       B.  $3x^2 \sin^2 x$   
           C.  $3\cos^3 x$       D.  $-3\sin x \cos^2 x$
- $\frac{d}{dx} (\cos^3 x) = \underline{\hspace{2cm}}$ .
૪૪. A.  $\sin^3 x$       B.  $3x^2 \sin^2 x$   
           C.  $3\cos^3 x$       D.  $-3\sin x \cos^2 x$
- $\int (\sec^2 x - \tan^2 x) dx = \underline{\hspace{2cm}} + c$
45. A.  $x$       B.  $\sec^3 x + \tan^3 x$   
           C.  $\sec x$       D.  $\tan x$
- $\int (\sec^2 x - \tan^2 x) dx = \underline{\hspace{2cm}} + c$
૪૫. A.  $x$       B.  $\sec^3 x + \tan^3 x$   
           C.  $\sec x$       D.  $\tan x$
- $\int \frac{1}{a^2-x^2} dx = \underline{\hspace{2cm}} + c$
46. A.  $\frac{1}{2a} \log \left| \frac{x-a}{x+a} \right|$       B.  $\frac{1}{2a} \log \left| \frac{x+a}{x-a} \right|$   
           C.  $\frac{1}{a} \log \sqrt{x+a}$       D. None Of Above
- $\int \frac{1}{a^2-x^2} dx = \underline{\hspace{2cm}} + c$
૪૬. A.  $\frac{1}{2a} \log \left| \frac{x-a}{x+a} \right|$       B.  $\frac{1}{2a} \log \left| \frac{x+a}{x-a} \right|$   
           C.  $\frac{1}{a} \log \sqrt{x+a}$       D. એક પણ નથી
- $\int e^{a \log x} dx = \underline{\hspace{2cm}} + c$
47. A.  $e^{a \log x}$       B.  $x^a$   
           C.  $ax^{a-1}$       D.  $\frac{x^{a+1}}{a+1}$
- $\int e^{a \log x} dx = \underline{\hspace{2cm}} + c$
૪૭. A.  $e^{a \log x}$       B.  $x^a$   
           C.  $ax^{a-1}$       D.  $\frac{x^{a+1}}{a+1}$
- $\int \left( \frac{1}{x} - \frac{1}{x^2} \right) e^x dx = \underline{\hspace{2cm}} + c$
48. A.  $\frac{e^x}{x}$       B.  $\frac{e^x}{x^2}$   
           C.  $xe^x$       D.  $(x-1)e^x$
- $\int \left( \frac{1}{x} - \frac{1}{x^2} \right) e^x dx = \underline{\hspace{2cm}} + c$
૪૮. A.  $\frac{e^x}{x}$       B.  $\frac{e^x}{x^2}$   
           C.  $xe^x$       D.  $(x-1)e^x$

49.  $\int \frac{f'(x)}{f(x)} dx = \text{_____} + c$
- A.  $f(x)$   
B.  $\log|f(x)|$   
C.  $f'(x)$   
D. None Of Above
50.  $\int_2^5 x^2 dx = \text{_____}$
- A. 117  
B. 133  
C. 125  
D. 39
51.  $\int_2^5 x^2 dx = \text{_____}$
- A. 117  
B. 133  
C. 125  
D. 39
- If  $f'(x) = \frac{1}{x^2+1}$  and  $f(0) = 0$  then  $f(x) = \text{_____}$ .
- A.  $x$   
B.  $x^2$   
C.  $\tan^{-1} x$   
D.  $x + \tan^{-1} x$
52.  $\int f'(x) dx = \frac{1}{x^2+1}$  અને  $f(0) = 0$  તો  $f(x) = \text{_____}$ .
- A.  $x$   
B.  $x^2$   
C.  $\tan^{-1} x$   
D.  $x + \tan^{-1} x$
- $\int \sin^2 x dx = \text{_____} + c$
- A.  $\cos^3 x$   
B.  $\sin 2x$   
C.  $\frac{x}{2} + \frac{\sin 2x}{4}$   
D.  $\frac{x}{2} - \frac{\sin 2x}{4}$
53.  $\int \sin^2 x dx = \text{_____} + c$
- A.  $\cos^3 x$   
B.  $\sin 2x$   
C.  $\frac{x}{2} + \frac{\sin 2x}{4}$   
D.  $\frac{x}{2} - \frac{\sin 2x}{4}$
- $\int_1^2 \frac{2x}{x^2+1} dx = \text{_____}$ .
- A.  $\log \frac{5}{2}$   
B.  $\log 2$   
C.  $\log 5$   
D.  $\log \frac{2}{5}$
- $\int_1^2 \frac{2x}{x^2+1} dx = \text{_____}$ .
- A.  $\log \frac{5}{2}$   
B.  $\log 2$   
C.  $\log 5$   
D.  $\log \frac{2}{5}$
- The area enclosed by the curve  $y = x^2$ , the X-axis and line  $x=2$  is  $\text{_____}$  units.
- A.  $\frac{32}{3}$   
B.  $\frac{16}{3}$   
C.  $\frac{8}{3}$   
D.  $\frac{64}{3}$
54. એક  $y = x^2$ , X-અક્ષ અને રેખા  $x=2$  થી ઘરાયેલા પ્રદેશ નું ક્ષેત્રફળ  $\text{_____}$  છે.
- A.  $\frac{32}{3}$   
B.  $\frac{16}{3}$

C.  $\frac{8}{3}$

D.  $\frac{64}{3}$

$\int_0^{\frac{\pi}{3}} \cos 3x \, dx = \text{_____}.$

55. A. 0  
C.  $\frac{\pi}{2}$
- B.  $\frac{\pi}{6}$   
D.  $\frac{\pi}{3}$

$\int_0^{\frac{\pi}{3}} \cos 3x \, dx = \text{_____}.$

- પ્ર. A. 0  
C.  $\frac{\pi}{2}$
- B.  $\frac{\pi}{6}$   
D.  $\frac{\pi}{3}$

$\int \operatorname{cosec} x * \cot x \, dx = \text{_____} + c$

56. A.  $-\cot x$   
C.  $\cot x$
- B.  $-\operatorname{cosec} x$   
D. None Of Above

$\int \operatorname{cosec} x * \cot x \, dx = \text{_____} + c$

- પ્ર. A.  $-\cot x$   
C.  $\cot x$
- B.  $-\operatorname{cosec} x$   
D. એક પણ નહિ

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

57. A.  $\sin^{-1}\left(\frac{x}{4}\right)$   
C.  $\tan^{-1}\left(\frac{x}{4}\right)$
- B.  $\cos^{-1}\left(\frac{x}{4}\right)$   
D. None Of Above

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

- પ્ર. A.  $\sin^{-1}\left(\frac{x}{4}\right)$   
C.  $\tan^{-1}\left(\frac{x}{4}\right)$
- B.  $\cos^{-1}\left(\frac{x}{4}\right)$   
D. એક પણ નહિ

$\int_{-\pi}^{\pi} \sin^3 x \, dx = \text{_____}.$

58. A. 0  
C.  $\frac{\pi}{2}$
- B. 1  
D.  $\pi$

$\int_{-\pi}^{\pi} \sin^3 x \, dx = \text{_____}.$

- પ્ર. A. 0  
C.  $\frac{\pi}{2}$
- B. 1  
D.  $\pi$

$\int \sqrt{x} \, dx = \text{_____} + c$

59. A.  $\frac{1}{2\sqrt{x}}$   
C.  $\frac{3}{x^{\frac{1}{2}}}$
- B.  $\frac{2}{3}(x^{\frac{3}{2}})$   
D. None Of Above

$\int \sqrt{x} \, dx = \text{_____} + c$

- પ્ર. A.  $\frac{1}{2\sqrt{x}}$   
C.  $\frac{3}{x^{\frac{1}{2}}}$
- B.  $\frac{2}{3}(x^{\frac{3}{2}})$   
D. એક પણ નહિ

\_\_\_\_\_ is function whose derivative and integration are same.

60. A.  $a^x$   
C.  $\log x$
- B.  $e^x$   
D. None Of Above

જોનું વિકલન અને સંકલન સરખા હોય તેવું વિઘેય \_\_\_\_\_ છે.

50. A.  $a^x$   
C.  $\log x$
- B.  $e^x$   
D. એક પણ નહિ

61. The mean of first five odd natural number is \_\_\_\_\_.



- A.  $\bar{x} = \frac{\sum x_i}{n}$   
 B.  $\bar{x} = \sum x_i$   
 C.  $\bar{x} = \frac{\sum f_i x_i}{n}$   
 D. None Of Above

સતત વર્ગીકૃત માહિતી માટે મધ્યક નું સૂત્ર \_\_\_\_\_ છે.

- 5C. A.  $\bar{x} = \frac{\sum x_i}{n}$   
 B.  $\bar{x} = \sum x_i$   
 C.  $\bar{x} = \frac{\sum f_i x_i}{n}$   
 D. એક પણ નહિં

If given data are 3,2,6,5,7,3,8,10,3,14 then Mode is \_\_\_\_\_.

69. A. 2  
 B. 4  
 C. 3  
 D. None Of Above

જો આપેલ અવલોકનો 3,2,6,5,7,3,8,10,3,14 માટે બહુલક \_\_\_\_\_ છે.

- 5E. A. 2  
 B. 4  
 C. 3  
 D. એક પણ નહિં

Mean of the first n natural number is \_\_\_\_\_.

70. A.  $\frac{n}{2}$   
 B.  $\frac{n-1}{2}$   
 C.  $\frac{n}{2} + 1$   
 D.  $\frac{n+1}{2}$

ઘેલા n પ્રાકૃતિક સંખ્યા નો મધ્યક \_\_\_\_\_ છે.

70. A.  $\frac{n}{2}$   
 B.  $\frac{n-1}{2}$   
 C.  $\frac{n}{2} + 1$   
 D.  $\frac{n+1}{2}$

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