

Enrollment No./Seat No.:

GUJARAT TECHNOLOGICAL UNIVERSITY
DIPLOMA IN ENGINEERING - SEMESTER - I EXAMINATION - WINTER 2025

Subject Code: DI01C00021

Date: 08-01-2026

Subject Name: Mathematics-I

Time: 10:30 AM TO 12:00PM

Total Marks: 70

Instructions:

1. Attempt all questions.
2. Make Suitable assumptions wherever necessary.
3. Each question is of 1 mark.
4. There is No negative marking.
5. Use of simple calculators and non-programmable scientific calculators are permitted.
6. English version is authentic.
7. Use only OMR to answer this question paper.
8. Draw the question paper in English and Gujarati Both languages.

Marks

Q.1 $\log_5(5) = \underline{\hspace{2cm}}.$
(A) 1 (B) 5 (C) 0 (D) 25

Q.૧ $\log_5(5) = \underline{\hspace{2cm}}.$
(અ) 1 (બ) 5 (સ) 0 (ડ) 25

Q.2 $\log_{100}(1) = \underline{\hspace{2cm}}.$
(A) 1 (B) 0 (C) 100 (D) 10

Q.૨ $\log_{100}(1) = \underline{\hspace{2cm}}.$
(અ) 1 (બ) 0 (સ) 100 (ડ) 10

Q.3 $\log_a(x \times y) = \underline{\hspace{2cm}}.$
(A) $\log_a(x)$ (B) $\log_a(y)$
(C) $\log_a(x) + \log_a(y)$ (D) $\log_a(x) - \log_a(y)$

Q.૩ $\log_a(x \times y) = \underline{\hspace{2cm}}.$
(અ) $\log_a(x)$ (બ) $\log_a(y)$
(સ) $\log_a(x) + \log_a(y)$ (ડ) $\log_a(x) - \log_a(y)$

Q.4 If $\begin{vmatrix} 2 & x \\ 2 & 3 \end{vmatrix} = 0$ then $x = \underline{\hspace{2cm}}.$
(A) 3 (B) 2 (C) 6 (D) 0

Q.૪ જો $\begin{vmatrix} 2 & x \\ 2 & 3 \end{vmatrix} = 0$ તો $x = \underline{\hspace{2cm}}.$
(અ) 3 (બ) 2 (સ) 6 (ડ) 0

Q.5 $\begin{vmatrix} x & y & z \\ 2 & 3 & 4 \\ x & y & z \end{vmatrix} =$ _____.

(A) 0 (B) 2 (C) 3 (D) xyz

Q.4 $\begin{vmatrix} x & y & z \\ 2 & 3 & 4 \\ x & y & z \end{vmatrix} =$ _____.

(A) 0 (B) 2 (C) 3 (D) xyz

Q.6 If $f(x) = \sin^2 x + \cos^2 x$ then $f(2) =$ _____.

(A) 0 (B) 2 (C) 1 (D) -1

Q.5 $f(x) = \sin^2 x + \cos^2 x$ then $f(2) =$ _____.

(A) 0 (B) 2 (C) 1 (D) -1

Q.7 $\log_5 7 \times \log_7 5 =$ _____.

(A) 7 (B) 5 (C) 1 (D) 0

Q.9 $\log_5 7 \times \log_7 5 =$ _____.

(A) 7 (B) 5 (C) 1 (D) 0

Q.8 $\log(10) - \log(5) =$ _____.

(A) $\log(2)$ (B) $\log(5)$ (C) $\log(10)$ (D) $\log(50)$

Q.4 $\log(10) - \log(5) =$ _____.

(A) $\log(2)$ (B) $\log(5)$ (C) $\log(10)$ (D) $\log(50)$

Q.9 If $f(x) = e^x$ then $f(x + y) =$ _____.

(A) $f(x) \times f(y)$ (B) $f(x) + f(y)$
(C) $f(x) - f(y)$ (D) $f(x) \div f(y)$

Q.6 $f(x) = e^x$ then $f(x + y) =$ _____.

(A) $f(x) \times f(y)$ (B) $f(x) + f(y)$
(C) $f(x) - f(y)$ (D) $f(x) \div f(y)$

Q.10 $\log(y) + \log\left(\frac{1}{y}\right) =$ _____.

(A) y (B) y^2 (C) 1 (D) 0

Q.10 $\log(y) + \log\left(\frac{1}{y}\right) =$ _____.

(A) y (B) y^2 (C) 1 (D) 0

Q.11 $\begin{vmatrix} 3 & 6 \\ 2 & 4 \end{vmatrix} =$ _____.

(A) 12 (B) 0 (C) 24 (D) 1

Q.11

$$\begin{vmatrix} 3 & 6 \\ 2 & 4 \end{vmatrix} = \underline{\hspace{2cm}}.$$

(A) 12 (B) 0 (C) 24 (D) 1

Q.12

If $\log_2(x) = 3$ then $x = \underline{\hspace{2cm}}$.

(A) 9 (B) 8 (C) 2 (D) 3

Q.12

જો $\log_2(x) = 3$ તો $x = \underline{\hspace{2cm}}$.

(A) 9 (B) 8 (C) 2 (D) 3

Q.13

If $f(x) = (2025)^x$ then $f(0) = \underline{\hspace{2cm}}$.

(A) 2025 (B) 2026 (C) 1 (D) 0

Q.13

જો $f(x) = (2025)^x$ તો $f(0) = \underline{\hspace{2cm}}$.

(A) 2025 (B) 2026 (C) 1 (D) 0

Q.14

$a^{\log_a b} = \underline{\hspace{2cm}}$.

(A) b (B) a (C) ab (D) 1

Q.14

$a^{\log_a b} = \underline{\hspace{2cm}}$.

(A) b (B) a (C) ab (D) 1

Q.15

$120^\circ = \underline{\hspace{2cm}}$ Radian.

(A) $\frac{2\pi}{3}$ (B) $\frac{3\pi}{2}$ (C) $\frac{\pi}{3}$ (D) $\frac{\pi}{2}$

Q.15

$120^\circ = \underline{\hspace{2cm}}$ રેડિયન.

(A) $\frac{2\pi}{3}$ (B) $\frac{3\pi}{2}$ (C) $\frac{\pi}{3}$ (D) $\frac{\pi}{2}$

Q.16

$\frac{3\pi}{2} = \underline{\hspace{2cm}}$.

(A) 90° (B) 180° (C) 270° (D) 360°

Q.16

$\frac{3\pi}{2} = \underline{\hspace{2cm}}$.

(A) 90° (B) 180° (C) 270° (D) 360°

Q.17

$\sin 60^\circ = \underline{\hspace{2cm}}$.

(A) $\cos 30^\circ$ (B) $\cos 60^\circ$ (C) $\cos 45^\circ$ (D) $\sin 30^\circ$

Q.17

$\sin 60^\circ = \underline{\hspace{2cm}}$.

(A) $\cos 30^\circ$ (B) $\cos 60^\circ$ (C) $\cos 45^\circ$ (D) $\sin 30^\circ$

Q.18

If $\cos \theta = \frac{3}{5}$ then $\sec \theta = \underline{\hspace{2cm}}$.

(A) $\frac{3}{5}$ (B) $\frac{5}{3}$ (C) $-\frac{5}{3}$ (D) $-\frac{3}{5}$

Q.18

જો $\cos \theta = \frac{3}{5}$ તો $\sec \theta = \underline{\hspace{2cm}}$.

(A) $\frac{3}{5}$ (B) $\frac{5}{3}$ (C) $-\frac{5}{3}$ (D) $-\frac{3}{5}$

Q.19 Period of $\sin(2x + 3)$ is _____.

- (A) 2π (B) $\frac{\pi}{2}$ (C) π (D) 3π

Q.૧૯ $\sin(2x + 3)$ નું અવર્તમાત્ર _____ છે.

- (અ) 2π (બ) $\frac{\pi}{2}$ (સ) π (ડ) 3π

Q.20 $\tan\left(\frac{\pi}{2} - \theta\right) =$ _____.

- (A) $\tan\theta$ (B) $-\tan\theta$ (C) $\cot\theta$ (D) $-\cot\theta$

Q.૨૦ $\tan\left(\frac{\pi}{2} - \theta\right) =$ _____.

- (અ) $\tan\theta$ (બ) $-\tan\theta$ (સ) $\cot\theta$ (ડ) $-\cot\theta$

Q.21 $\cos(A + B) =$ _____.

- (A) $\cos A \cos B + \sin A \sin B$ (B) $\cos A \cos B - \sin A \sin B$
(C) $\sin A \cos B + \cos A \sin B$ (D) $\sin A \cos B - \cos A \sin B$

Q.૨૧ $\cos(A + B) =$ _____.

- (અ) $\cos A \cos B + \sin A \sin B$ (બ) $\cos A \cos B - \sin A \sin B$
(સ) $\sin A \cos B + \cos A \sin B$ (ડ) $\sin A \cos B - \cos A \sin B$

Q.22 $\sin 2\theta =$ _____.

- (A) $2\sin\theta\cos\theta$ (B) $\sin\theta\cos\theta$ (C) $\frac{\sin\theta\cos\theta}{2}$ (D) $4\sin\theta\cos\theta$

Q.૨૨ $\sin 2\theta =$ _____.

- (અ) $2\sin\theta\cos\theta$ (બ) $\sin\theta\cos\theta$ (સ) $\frac{\sin\theta\cos\theta}{2}$ (ડ) $4\sin\theta\cos\theta$

Q.23 $\tan(\pi + \theta) =$ _____.

- (A) $\cot\theta$ (B) $-\cot\theta$ (C) $\tan\theta$ (D) $-\tan\theta$

Q.૨૩ $\tan(\pi + \theta) =$ _____.

- (અ) $\cot\theta$ (બ) $-\cot\theta$ (સ) $\tan\theta$ (ડ) $-\tan\theta$

Q.24 $\tan^{-1}(1) =$ _____.

- (A) $\frac{\pi}{4}$ (B) $-\frac{\pi}{4}$ (C) $\frac{\pi}{2}$ (D) $-\frac{\pi}{2}$

Q.૨૪ $\tan^{-1}(1) =$ _____.

- (અ) $\frac{\pi}{4}$ (બ) $-\frac{\pi}{4}$ (સ) $\frac{\pi}{2}$ (ડ) $-\frac{\pi}{2}$

Q.25 $\sin^{-1}\left(\frac{2}{7}\right) + \cos^{-1}\left(\frac{2}{7}\right) =$ _____.

- (A) $\frac{\pi}{2}$ (B) $-\frac{\pi}{2}$ (C) $-\frac{\pi}{4}$ (D) $\frac{\pi}{4}$

Q.24

$$\sin^{-1}\left(\frac{2}{7}\right) + \cos^{-1}\left(\frac{2}{7}\right) = \underline{\hspace{2cm}}.$$

(અ) $\frac{\pi}{2}$ (બ) $-\frac{\pi}{2}$ (ક) $-\frac{\pi}{4}$ (ડ) $\frac{\pi}{4}$

Q.26

$$\sin(\sin^{-1}(x)) = \underline{\hspace{2cm}}.$$

(A) 1 (B) 0 (C) x (D) $\frac{\pi}{2}$

Q.25

$$\sin(\sin^{-1}(x)) = \underline{\hspace{2cm}}.$$

(અ) 1 (બ) 0 (ક) x (ડ) $\frac{\pi}{2}$

Q.27

$$\tan\theta \times \cot\theta = \underline{\hspace{2cm}}.$$

(A) $\tan\theta$ (B) $\cot\theta$ (C) 1 (D) 0

Q.29

$$\tan\theta \times \cot\theta = \underline{\hspace{2cm}}.$$

(અ) $\tan\theta$ (બ) $\cot\theta$ (ક) 1 (ડ) 0

Q.28

$$\sin\pi + \sin 2\pi + \sin 3\pi = \underline{\hspace{2cm}}.$$

(A) 0 (B) 1 (C) 2 (D) 3

Q.28

$$\sin\pi + \sin 2\pi + \sin 3\pi = \underline{\hspace{2cm}}.$$

(અ) 0 (બ) 1 (ક) 2 (ડ) 3

Q.29

$$\sin(A+B) \sin(A-B) = \underline{\hspace{2cm}}.$$

(A) $\sin^2 A + \sin^2 B$ (B) $\sin^2 A - \sin^2 B$ (C) $\sin^2 B$ (D) $\sin^2 A$

Q.29

$$\sin(A+B) \sin(A-B) = \underline{\hspace{2cm}}.$$

(અ) $\sin^2 A + \sin^2 B$ (બ) $\sin^2 A - \sin^2 B$ (ક) $\sin^2 B$ (ડ) $\sin^2 A$

Q.30

$$\sin(-\theta) = \underline{\hspace{2cm}}.$$

(A) $-\sin\theta$ (B) $\sin\theta$ (C) $\cos\theta$ (D) $-\cos\theta$

Q.30

$$\sin(-\theta) = \underline{\hspace{2cm}}.$$

(અ) $-\sin\theta$ (બ) $\sin\theta$ (ક) $\cos\theta$ (ડ) $-\cos\theta$

Q.31

 is not a unit vector.

(A) (1, 0, 0) (B) (0, 1, 0) (C) (0, 0, 1) (D) (0, 0, 0)

Q.31

 એકમ સદિશ નથી.

(અ) (1, 0, 0) (બ) (0, 1, 0) (ક) (0, 0, 1) (ડ) (0, 0, 0)

Q.32

If $\bar{x} = 3i - 4j$ then $|\bar{x}| = \underline{\hspace{2cm}}.$

(A) 5 (B) -5 (C) 3 (D) 4

Q.32

જો $\bar{x} = 3i - 4j$ તો $|\bar{x}| = \underline{\hspace{2cm}}.$

(અ) 5 (બ) -5 (ક) 3 (ડ) 4

Q.33

$$i \bullet (j \times k) = \underline{\hspace{2cm}}.$$

(A) 0 (B) 1 (C) i (D) j

- Q.33** $i \bullet (j \times k) = \underline{\hspace{2cm}}$.
 (અ) 0 (બ) 1 (ક) i (ડ) j
- Q.34** The unit vector in the direction of a vector $\vec{a} = 3i + 4j + 5k$ is $\underline{\hspace{2cm}}$.
 (A) $\hat{a} = \frac{3}{\sqrt{29}}i + \frac{4}{\sqrt{29}}j + \frac{5}{\sqrt{29}}k$ (B) $\hat{a} = -\frac{3}{\sqrt{29}}i + \frac{4}{\sqrt{29}}j + \frac{5}{\sqrt{29}}k$
 (C) $\hat{a} = \frac{3}{\sqrt{29}}i - \frac{4}{\sqrt{29}}j + \frac{5}{\sqrt{29}}k$ (D) $\hat{a} = \frac{3}{\sqrt{29}}i + \frac{4}{\sqrt{29}}j - \frac{5}{\sqrt{29}}k$
- Q.3૪** સદિશ $\vec{a} = 3i + 4j + 5k$ ની દિશાનો એકમ સદિશ $\underline{\hspace{2cm}}$ છે.
 (અ) $\hat{a} = \frac{3}{\sqrt{29}}i + \frac{4}{\sqrt{29}}j + \frac{5}{\sqrt{29}}k$ (બ) $\hat{a} = -\frac{3}{\sqrt{29}}i + \frac{4}{\sqrt{29}}j + \frac{5}{\sqrt{29}}k$
 (ક) $\hat{a} = \frac{3}{\sqrt{29}}i - \frac{4}{\sqrt{29}}j + \frac{5}{\sqrt{29}}k$ (ડ) $\hat{a} = \frac{3}{\sqrt{29}}i + \frac{4}{\sqrt{29}}j - \frac{5}{\sqrt{29}}k$
- Q.35** $(2i + 3j + 4k) \bullet (4i - 5j + 6k) = \underline{\hspace{2cm}}$.
 (A) -17 (B) 17 (C) 47 (D) -47
- Q.૩૫** $(2i + 3j + 4k) \bullet (4i - 5j + 6k) = \underline{\hspace{2cm}}$.
 (અ) -17 (બ) 17 (ક) 47 (ડ) -47
- Q.36** $(5i + 2j + 7k) \times (5i + 2j + 7k) = \underline{\hspace{2cm}}$.
 (A) 25 (B) 4 (C) 49 (D) $\vec{0}$
- Q.૩૬** $(5i + 2j + 7k) \times (5i + 2j + 7k) = \underline{\hspace{2cm}}$.
 (અ) 25 (બ) 4 (ક) 49 (ડ) $\vec{0}$
- Q.37** $\vec{x} \bullet (\vec{x} \times \vec{y}) = \underline{\hspace{2cm}}$.
 (A) 0 (B) $\vec{x}$ (C) $\vec{y}$ (D) 1
- Q.૩૭** $\vec{x} \bullet (\vec{x} \times \vec{y}) = \underline{\hspace{2cm}}$.
 (અ) 0 (બ) $\vec{x}$ (ક) $\vec{y}$ (ડ) 1
- Q.38** $|i| + |j| + |k| = \underline{\hspace{2cm}}$.
 (A) 1 (B) -1 (C) 3 (D) 0
- Q.૩૮** $|i| + |j| + |k| = \underline{\hspace{2cm}}$.
 (અ) 1 (બ) -1 (ક) 3 (ડ) 0
- Q.39** If $\vec{x}$ and $\vec{y}$ are perpendicular then $\vec{x} \bullet \vec{y} = \underline{\hspace{2cm}}$.
 (A) 1 (B) 0 (C) -1 (D) $\vec{0}$
- Q.૩૯** જો $\vec{x}$ અને $\vec{y}$ પરસ્પર લંબ હોય તો $\vec{x} \bullet \vec{y} = \underline{\hspace{2cm}}$.
 (અ) 1 (બ) 0 (ક) -1 (ડ) $\vec{0}$
- Q.40** $\vec{x} \times \vec{y} = \underline{\hspace{2cm}}$.
 (A) $\vec{y} \times \vec{x}$ (B) $-\vec{y} \times \vec{x}$ (C) 0 (D) 1
- Q.૪૦** $\vec{x} \times \vec{y} = \underline{\hspace{2cm}}$.
 (અ) $\vec{y} \times \vec{x}$ (બ) $-\vec{y} \times \vec{x}$ (ક) 0 (ડ) 1

- Q.41** If force $\vec{F} = 3i - j + 2k$ and displacement $\vec{d} = 4i + 2j + k$ then work done by force $W =$ _____.
 (A) -12 (B) 12 (C) 16 (D) -16
- Q.૪૧** જો બળ $\vec{F} = 3i - j + 2k$ અને સ્થાનાંતર $\vec{d} = 4i + 2j + k$ હોય તો બળ વડે થતું કાર્ય $W =$ _____.
 (અ) -12 (બ) 12 (સ) 16 (ડ) -16
- Q.42** $|\cos\theta i + \sin\theta j + 0 k| =$ _____.
 (A) $\cos\theta$ (B) $\sin\theta$ (C) 1 (D) 0
- Q.૪૨** $|\cos\theta i + \sin\theta j + 0 k| =$ _____.
 (અ) $\cos\theta$ (બ) $\sin\theta$ (સ) 1 (ડ) 0
- Q.43** $i \bullet i + j \bullet j + k \bullet k =$ _____.
 (A) 0 (B) 1 (C) -1 (D) 3
- Q.૪૩** $i \bullet i + j \bullet j + k \bullet k =$ _____.
 (અ) 0 (બ) 1 (સ) -1 (ડ) 3
- Q.44** $2\vec{x} \times 2\vec{y} =$ _____.
 (A) $4(\vec{x} \times \vec{y})$ (B) $\vec{x} \times \vec{y}$ (C) $2\vec{x} \times \vec{y}$ (D) $\vec{x} \times 2\vec{y}$
- Q.૪૪** $2\vec{x} \times 2\vec{y} =$ _____.
 (અ) $4(\vec{x} \times \vec{y})$ (બ) $\vec{x} \times \vec{y}$ (સ) $2\vec{x} \times \vec{y}$ (ડ) $\vec{x} \times 2\vec{y}$
- Q.45** Radius of the circle $x^2 + y^2 = 16$ is _____.
 (A) 16 (B) 4 (C) -16 (D) -4
- Q.૪૫** વર્તુળ $x^2 + y^2 = 16$ ની ત્રિજ્યા _____ છે.
 (અ) 16 (બ) 4 (સ) -16 (ડ) -4
- Q.46** Equation of circle having centre (0,0) and radius 3 is _____.
 (A) $x^2 + y^2 = 9$ (B) $x^2 + y^2 = 3$
 (C) $x^2 + y^2 = 6$ (D) $x^2 + y^2 = 27$
- Q.૪૬** (0,0) કેન્દ્રવાળા અને 3 ત્રિજ્યાવાળા વર્તુળનું સમીકરણ _____ છે.
 (અ) $x^2 + y^2 = 9$ (બ) $x^2 + y^2 = 3$
 (સ) $x^2 + y^2 = 6$ (ડ) $x^2 + y^2 = 27$
- Q.47** X-intercept of the line $5x + 4y - 11 = 0$ is _____.
 (A) $-\frac{11}{5}$ (B) $\frac{11}{5}$ (C) $-\frac{11}{4}$ (D) $\frac{11}{4}$
- Q.૪૭** રેખા $5x + 4y - 11 = 0$ નો X-અંતઃખંડ _____ છે.
 (અ) $-\frac{11}{5}$ (બ) $\frac{11}{5}$ (સ) $-\frac{11}{4}$ (ડ) $\frac{11}{4}$
- Q.48** Slope of a line $7x - 3y + 10 = 0$ is _____.
 (A) $\frac{7}{3}$ (B) $-\frac{7}{3}$ (C) $-\frac{3}{7}$ (D) $\frac{3}{7}$

- Q.૪૮** રેખા $7x - 3y + 10 = 0$ નો ઢાળ _____ છે.
 (અ) $\frac{7}{3}$ (બ) $-\frac{7}{3}$ (ક) $-\frac{3}{7}$ (ડ) $\frac{3}{7}$
- Q.49** Centre of the circle $x^2 + y^2 = 25$ is _____.
 (A) (5,0) (B) (0,5) (C) (0,0) (D) (5,5)
- Q.૪૯** વર્તુળ $x^2 + y^2 = 25$ નું કેન્દ્ર _____ છે.
 (અ) (5,0) (બ) (0,5) (ક) (0,0) (ડ) (5,5)
- Q.50** Slope of a line passing through points (0,0) and (2,2) is _____.
 (A) 0 (B) 1 (C) 2 (D) 4
- Q.૫૦** બિંદુઓ (0,0) તથા (2,2) માંથી પસાર થતી રેખાનો ઢાળ _____ છે.
 (અ) 0 (બ) 1 (ક) 2 (ડ) 4
- Q.51** Slope of a line perpendicular to the line $3x - 5y + 7 = 0$ is _____.
 (A) $\frac{5}{3}$ (B) $-\frac{5}{3}$ (C) $-\frac{3}{5}$ (D) $\frac{3}{5}$
- Q.૫૧** રેખા $3x - 5y = 11$ ને લંબ રેખાનો ઢાળ _____ છે.
 (અ) $\frac{5}{3}$ (બ) $-\frac{5}{3}$ (ક) $-\frac{3}{5}$ (ડ) $\frac{3}{5}$
- Q.52** Y-intercept of the line $3x + 5y - 1 = 0$ is _____.
 (A) 5 (B) -5 (C) $\frac{1}{5}$ (D) $-\frac{1}{5}$
- Q.૫૨** રેખા $3x + 5y - 1 = 0$ નો Y-અંતઃખંડ _____ છે.
 (અ) 5 (બ) -5 (ક) $\frac{1}{5}$ (ડ) $-\frac{1}{5}$
- Q.53** Centre of the circle $x^2 + y^2 - 4x - 4y + 7 = 0$ is _____.
 (A) (2,2) (B) (-2,2) (C) (2,-2) (D) (-2,-2)
- Q.૫૩** વર્તુળ $x^2 + y^2 - 4x - 4y + 7 = 0$ નું કેન્દ્ર _____ છે.
 (અ) (2,2) (બ) (-2,2) (ક) (2,-2) (ડ) (-2,-2)
- Q.54** Radius of the circle $x^2 + y^2 - 4x - 4y + 7 = 0$ is _____.
 (A) 1 (B) 0 (C) 4 (D) 7
- Q.૫૪** વર્તુળ $x^2 + y^2 - 4x - 4y + 7 = 0$ ની ત્રિજ્યા _____ છે.
 (અ) 1 (બ) 0 (ક) 4 (ડ) 7
- Q.55** Centre of the circle $x^2 + y^2 + 2gx + 2fy + c = 0$ is _____.
 (A) $(-g, -f)$ (B) $(-g, f)$ (C) $(g, -f)$ (D) (g, f)
- Q.૫૫** વર્તુળ $x^2 + y^2 + 2gx + 2fy + c = 0$ નું કેન્દ્ર _____ છે.
 (અ) $(-g, -f)$ (બ) $(-g, f)$ (ક) $(g, -f)$ (ડ) (g, f)

Q.56 The radius of the circle $x^2 + y^2 + 2gx + 2fy + c = 0$ is _____.

- (A) $\sqrt{g^2 + f^2 + c}$ (B) $\sqrt{g^2 + f^2 - c}$
(C) $g^2 + f^2 - c$ (D) $g^2 + f^2 + c$

Q.૫૬ વર્તુળ $x^2 + y^2 + 2gx + 2fy + c = 0$ ની ત્રિજ્યા _____ છે.

- (અ) $\sqrt{g^2 + f^2 + c}$ (ઁ) $\sqrt{g^2 + f^2 - c}$
(સ) $g^2 + f^2 - c$ (ડ) $g^2 + f^2 + c$

Q.57 $\lim_{x \rightarrow 0} \frac{x^4 - 1}{x - 1} =$ _____

- (A) 1 (B) 4 (C) -1 (D) 3

Q.૫૭ $\lim_{x \rightarrow 0} \frac{x^4 - 1}{x - 1} =$ _____.

- (અ) 1 (ઁ) 4 (સ) -1 (ડ) 3

Q.58 $\lim_{x \rightarrow 0} \frac{5^x - 1}{x} =$ _____.

- (A) $\log_e(5)$ (B) $\log_e(25)$ (C) $\log_e(10)$ (D) $\log_e(125)$

Q.૫૮ $\lim_{x \rightarrow 0} \frac{5^x - 1}{x} =$ _____.

- (અ) $\log_e(5)$ (ઁ) $\log_e(25)$ (સ) $\log_e(10)$ (ડ) $\log_e(125)$

Q.59 $\lim_{x \rightarrow 0} \frac{e^{ax} - 1}{x} =$ _____.

- (A) e^a (B) e (C) a (D) a^e

Q.૫૯ $\lim_{x \rightarrow 0} \frac{e^{ax} - 1}{x} =$ _____.

- (અ) e^a (ઁ) e (સ) a (ડ) a^e

Q.60 $\lim_{x \rightarrow 0} \left(1 + \frac{2x}{3}\right)^{\frac{1}{x}} =$ _____.

- (A) e^2 (B) e^3 (C) $e^{\frac{2}{3}}$ (D) $e^{\frac{3}{2}}$

Q.૬૦ $\lim_{x \rightarrow 0} \left(1 + \frac{2x}{3}\right)^{\frac{1}{x}} =$ _____.

- (અ) e^2 (ઁ) e^3 (સ) $e^{\frac{2}{3}}$ (ડ) $e^{\frac{3}{2}}$

Q.61 $\lim_{x \rightarrow \infty} \left(1 + \frac{5}{x}\right)^{\frac{x}{3}} =$ _____.

- (A) $e^{\frac{5}{3}}$ (B) $e^{\frac{3}{5}}$ (C) $e^{-\frac{3}{5}}$ (D) $e^{-\frac{5}{3}}$

Q.૬૧ $\lim_{x \rightarrow \infty} \left(1 + \frac{5}{x}\right)^{\frac{x}{3}} =$ _____.

- (અ) $e^{\frac{5}{3}}$ (ઁ) $e^{\frac{3}{5}}$ (સ) $e^{-\frac{3}{5}}$ (ડ) $e^{-\frac{5}{3}}$

Q.62

$$\lim_{x \rightarrow 0} \frac{\sin 3x}{4x} = \underline{\hspace{2cm}}.$$

(A) $\frac{3}{4}$ (B) $\frac{4}{3}$ (C) 4 (D) 3

Q.52

$$\lim_{x \rightarrow 0} \frac{\sin 3x}{4x} = \underline{\hspace{2cm}}.$$

(A) $\frac{3}{4}$ (B) $\frac{4}{3}$ (C) 4 (D) 3

Q.63

$$\lim_{x \rightarrow 0} \frac{\tan 7x}{\sin 5x} = \underline{\hspace{2cm}}.$$

(A) $\frac{5}{7}$ (B) $\frac{7}{5}$ (C) 49 (D) 25

Q.53

$$\lim_{x \rightarrow 0} \frac{\tan 7x}{\sin 5x} = \underline{\hspace{2cm}}.$$

(A) $\frac{5}{7}$ (B) $\frac{7}{5}$ (C) 49 (D) 25

Q.64

$$\lim_{x \rightarrow 2} \frac{x^5 - 32}{x - 2} = \underline{\hspace{2cm}}.$$

(A) 5 (B) 2 (C) 16 (D) 80

Q.54

$$\lim_{x \rightarrow 2} \frac{x^5 - 32}{x - 2} = \underline{\hspace{2cm}}.$$

(A) 5 (B) 2 (C) 16 (D) 80

Q.65

$$\lim_{n \rightarrow \infty} \frac{1}{n^2} = \underline{\hspace{2cm}}.$$

(A) 0 (B) 1 (C) 2 (D) -1

Q.54

$$\lim_{n \rightarrow \infty} \frac{1}{n^2} = \underline{\hspace{2cm}}.$$

(A) 0 (B) 1 (C) 2 (D) -1

Q.66

$$\lim_{n \rightarrow \infty} \frac{2n + 9}{3n - 7} = \underline{\hspace{2cm}}.$$

(A) $\frac{3}{2}$ (B) $\frac{2}{3}$ (C) $\frac{9}{7}$ (D) $\frac{7}{9}$

Q.55

$$\lim_{n \rightarrow \infty} \frac{2n + 9}{3n - 7} = \underline{\hspace{2cm}}.$$

(A) $\frac{3}{2}$ (B) $\frac{2}{3}$ (C) $\frac{9}{7}$ (D) $\frac{7}{9}$

Q.67

$$\lim_{x \rightarrow 0} \frac{2^{5x} - 1}{x} = \underline{\hspace{2cm}}.$$

(A) $2 \log 5$ (B) $5 \log 2$ (C) $\log 2$ (D) $\log 5$

Q.59

$$\lim_{x \rightarrow 0} \frac{2^{5x} - 1}{x} = \underline{\hspace{2cm}}.$$

(A) $2 \log 5$ (B) $5 \log 2$ (C) $\log 2$ (D) $\log 5$

Q.68

$$\lim_{x \rightarrow 0} \frac{\sin x^0}{x} = \underline{\hspace{2cm}}.$$

(A) 1^0 (B) x^0 (C) 0 (D) 1

Q.52

$$\lim_{x \rightarrow 0} \frac{\sin x^0}{x} = \underline{\hspace{2cm}}.$$

(A) 1^0 (B) x^0 (C) 0 (D) 1

Q.69

$$\lim_{n \rightarrow 0} (1 + n)^{\frac{1}{n}} = \underline{\hspace{2cm}}.$$

(A) 1 (B) 0 (C) e (D) ∞

Q.56

$$\lim_{n \rightarrow 0} (1 + n)^{\frac{1}{n}} = \underline{\hspace{2cm}}.$$

(A) 1 (B) 0 (C) e (D) ∞

Q.70

$$\lim_{x \rightarrow 1} x^{2025} = \underline{\hspace{2cm}}.$$

(A) 2025 (B) 1 (C) -1 (D) 0

Q.90

$$\lim_{x \rightarrow 1} x^{2025} = \underline{\hspace{2cm}}.$$

(A) 2025 (B) 1 (C) -1 (D) 0
