MHT-CET Mathematics Sample Paper- 5

Duration: 90 Minutes **Maximum Marks: 100**

Instructions

- This paper contains a total of **50** Multiple Choice Questions.
- Each correct answer carries **+2 marks**.
- No negative marking for incorrect questions.
- Use of mobile phones, smartwatches, or any electronic gadgets is strictly prohibited.
- No marks will be deducted for questions that are left unattempted.

Q1. If $f(x) = \lim_{n\to\infty} \frac{\log(2+x) - x^{2n}\sin x}{1+x^{2n}}$, then the value of $f(1)$ so that $f(x)$ is continuous at $x = 1$ is:

(A) $\log 3$

(B) $\frac{1}{2}(\log 3 - \sin 1)$

(C) $\frac{1}{2}(\sin 1 - \log 3)$

(D) 0

Q2. The value of $\lim_{x\to 0}\left(\frac{1+5x^2}{1+3x^2}\right)^{1/x^2}$ is:

(A) e^2

(B) $e^{1/2}$

(C) e^{-2}

(D) e

Q3. If $f(x) = [x^2]\sin(\pi x)$ (where $[\cdot]$ denotes greatest integer function), then $f(x)$ is discontinuous at:

(A) All integers

(B) All $x = \sqrt{n}$ where $n \in \mathbb{N}$

(C) $x = \sqrt{n}$ except when n is a perfect square

(D) No point in $\mathbb{R}$

Q4. If $x = \sqrt{a^{\sin^{-1} t}}$ and $y = \sqrt{a^{\cos^{-1} t}}$, then $\frac{dy}{dx}$ is equal to:

(A) $\frac{y}{x}$

(B) $-\frac{y}{x}$

(C) $\frac{x}{y}$

(D) $-\frac{x}{y}$

Q5. If $y = \tan^{-1}\left(\frac{\sqrt{1+x^2}-1}{x}\right)$, then $y'(1)$ is:

(A) $\frac{1}{4}$

(B) $\frac{1}{2}$

(C) 1

(D) 0

Q6. Let $f(x) = e^x g(x)$, $g(0) = 2$ and $g'(0) = 1$, then $f'(0)$ is:

(A) 1

(B) 3

(C) 2

(D) 0

Q7. The derivative of $(\ln x)^x + x^{\ln x}$ at $x = e$ is:

(A) 1

(B) 2

(C) $\frac{2}{e}$

(D) $e + 2$

Q8. If $y = \sin(m \sin^{-1} x)$, then $(1 - x^2)y'' - xy'$ equals:

(A) $m^2 y$

(B) $-m^2 y$

(C) my

(D) 0

Q9. Evaluate: $\int \frac{dx}{x^2(x^4+1)^{3/4}}$

(A) $-\frac{(x^4+1)^{1/4}}{x} + C$

(B) $\frac{(x^4+1)^{1/4}}{x} + C$

(C) $-\frac{(x^4+1)^{1/4}}{x^2} + C$

(D) $\frac{(x^4+1)^{1/4}}{x^4} + C$

Q10. Evaluate: $\int_0^{\pi/2} \frac{\sin^{100} x}{\sin^{100} x + \cos^{100} x} dx$

(A) $\frac{\pi}{2}$

(B) $\frac{\pi}{4}$

(C) π

(D) 0

Q11. Evaluate: $\int \frac{dx}{\cos^6 x + \sin^6 x}$

(A) $\tan^{-1}(\tan x - \cot x) + C$

(B) $\tan^{-1}(\tan x + \cot x) + C$

(C) $\sin^{-1}(\sin 2x) + C$

(D) None

Q12. Evaluate: $\int_{-1}^{1} \frac{dx}{1+e^{\sin x}}$

(A) 0

(B) 1

(C) 2

(D) $\frac{1}{2}$

Q13. If $I_n = \int_0^{\pi/4} \tan^n x \, dx$, then $I_n + I_{n-2}$ equals:

(A) $\frac{1}{n}$

(B) $\frac{1}{n-1}$

(C) $\frac{1}{n+1}$

(D) $\frac{2}{n}$

Q14. Number of four-digit numbers greater than 4321 formed using digits $\{0, 1, 2, 3, 4, 5\}$ (repetition allowed) is:

(A) 360

(B) 310

(C) 311

(D) 309

Q15. Three persons independently choose one of three houses. Probability all choose the same house is:

(A) $\frac{2}{9}$

(B) $\frac{1}{9}$

(C) $\frac{1}{3}$

(D) $\frac{7}{9}$

Q16. A bag has 4 red and 6 black balls. One ball is drawn and replaced with 2 more of same color. Then a ball is drawn. Probability of red is:

(A) $\frac{2}{5}$

(B) $\frac{3}{5}$

(C) $\frac{4}{7}$

(D) $\frac{1}{2}$

Q17. Number of ways to seat 5 boys and 5 girls so that no two girls sit together is:

(A) $5! \times 6!$

(B) $5! \times 5!$

(C) $2 \times 5!$

(D) 6!

Q18. Eccentricity of a hyperbola with given conditions is:

(A) $\frac{4}{3}$

(B) $\frac{4}{\sqrt{3}}$

(C) $\frac{2}{\sqrt{3}}$

(D) $\sqrt{3}$

Q19. Tangent to parabola $y^2 = 8x$ perpendicular to $x - y + 5 = 0$ is:

(A) $x + y + 2 = 0$

(B) $x + y - 2 = 0$

(C) $x - y + 2 = 0$

(D) $x - y - 2 = 0$

Q20. Product of perpendiculars from foci of ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ on any tangent is:

(A) a^2

(B) b^2

(C) ab

(D) $a^2 + b^2$

Q21. If $y = mx + c$ is tangent to hyperbola $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$, then c^2 equals:

(A) $a^2m^2 + b^2$

(B) $a^2m^2 - b^2$

(C) $b^2m^2 - a^2$

(D) $a^2 + b^2m^2$

Q22. The area of the region bounded by the curves $y = |x - 1|$ and $y = 3 - |x|$ is:

(A) 2 sq. units

(B) 3 sq. units

(C) 4 sq. units

(D) 6 sq. units

Q23. The area bounded by the parabola $y^2 = 4x$ and its latus rectum is:

(A) $2/3$

(B) $4/3$

(C) $8/3$

(D) $16/3$

Q24. The solution of the differential equation $\frac{dy}{dx} + \frac{y}{x} = x^2$ under the condition $y(1) = 1$ is:

(A) $4xy = x^4 + 3$

(B) $4xy = x^4 - 3$

(C) $xy = x^4 + 3$

(D) $y = x^3 + 3$

Q25. The integrating factor of the differential equation $(1 - y^2)\frac{dx}{dy} + yx = ay$ is:

(A) $\frac{1}{y^2-1}$

(B) $\frac{1}{\sqrt{1-y^2}}$

(C) $\frac{1}{1-y^2}$

(D) $\sqrt{1 - y^2}$

Q26. The order and degree of the differential equation $\left[1 + \left(\frac{dy}{dx}\right)^2\right]^{3/2} = \frac{d^2y}{dx^2}$ are respectively:

(A) 2, 2

(B) 2, 3

(C) 1, 2

(D) 2, 1

Q27. If z is a complex number such that $|z| \geq 2$, then the minimum value of $|z + \frac{1}{2}|$ is:

(A) 1

(B) $3/2$

(C) $5/2$

(D) 0

Q28. If ω is a complex cube root of unity, then the value of $\sin\left[(\omega^{10} + \omega^{23})\pi - \frac{\pi}{4}\right]$ is:

(A) $1/\sqrt{2}$

(B) $-1/\sqrt{2}$

(C) 1

(D) $\sqrt{3}/2$

Q29. The locus of z satisfying $\arg\left(\frac{z-1}{z+1}\right) = \frac{\pi}{4}$ is:

(A) A circle

(B) A straight line

(C) A parabola

(D) An ellipse

Q30. If α, β are the roots of $x^2 - p(x+1) - c = 0$, then $(\alpha+1)(\beta+1)$ is equal to:

(A) c

(B) $1 - c$

(C) $1 + c$

(D) $p + c$

Q31. The values of a for which the quadratic equation $3x^2+2(a^2+1)x+(a^2-3a+2) = 0$ possesses roots of opposite signs lie in:

(A) $(-\infty, 1)$

(B) $(2, \infty)$

(C) $(1, 2)$

(D) $(0, 2)$

Q32. If the roots of $x^2 - bx + c = 0$ are two consecutive integers, then $b^2 - 4c$ is:

(A) 0

(B) 1

(C) 2

(D) 4

Q33. If the sum of first n terms of an A.P. is $3n^2 + 5n$ and its m^{th} term is 164, then m is:

(A) 26

(B) 27

(C) 28

(D) 25

Q34. The sum of the infinite geometric series $1 + \frac{2}{3} + \frac{4}{9} + \ldots$ is:

(A) 3

(B) 2

(C) 4

(D) 5

Q35. If a, b, c are in H.P., then $\frac{1}{b-a} + \frac{1}{b-c}$ is equal to:

(A) $\frac{1}{a} + \frac{1}{c}$

(B) $\frac{1}{a} - \frac{1}{c}$

(C) $\frac{1}{b}$

(D) None

Q36. The coefficient of x^7 in the expansion of $(1 + 3x - 2x^3)^{10}$ is:

(A) 62640

(B) 60240

(C) 52640

(D) 0

Q37. The term independent of x in the expansion of $\left(\sqrt{x} - \frac{k}{x^2}\right)^{10}$ is 405. The value of k is:

(A) ± 3

(B) ± 2

(C) ± 1

(D) 0

Q38. The distance between the parallel lines $3x + 4y - 9 = 0$ and $6x + 8y + 15 = 0$ is:

(A) 3.3

(B) 3.9

(C) 2.7

(D) 5

Q39. If $x^y = e^{x-y}$, then $\frac{dy}{dx}$ at $x = 1$ is equal to:

(A) 0

(B) 1

(C) -1

(D) e

Q40. The equation of the line passing through $(1, 2)$ and perpendicular to $x + y + 7 = 0$ is:

(A) $x - y + 1 = 0$

(B) $x - y - 1 = 0$

(C) $x + y - 3 = 0$

(D) $x - y = 0$

Q41. The equation of the circle passing through the origin and cutting intercepts 10 and 24 from the positive x and y axes respectively is:

(A) $x^2 + y^2 - 10x - 24y = 0$

(B) $x^2 + y^2 + 10x + 24y = 0$

(C) $x^2 + y^2 - 5x - 12y = 0$

(D) $x^2 + y^2 - 24x - 10y = 0$

Q42. If the line $3x - 4y = k$ touches the circle $x^2 + y^2 - 4x - 8y - 5 = 0$, then k can be:

(A) 15

(B) 10

(C) -5

(D) 25

Q43. The length of the tangent from the point $(5, 1)$ to the circle $x^2+y^2+6x-4y-3 = 0$ is:

(A) 7

(B) 49

(C) $\sqrt{52}$

(D) $\sqrt{10}$

Q44. If $\vec{a} \cdot \vec{b} = |\vec{a} \times \vec{b}|$, then the angle between $\vec{a}$ and $\vec{b}$ is:

(A) $\pi/2$

(B) $\pi/4$

(C) $\pi/3$

(D) $\pi/6$

Q45. The volume of the parallelepiped whose coterminous edges are $2i - 3j + 4k$, $i + 2j - k$, and $3i - j + 2k$ is:

(A) 7

(B) 14

(C) 2

(D) 0

Q46. The angle between the lines $\frac{x-2}{3} = \frac{y+1}{-2}, z = 2$ and $\frac{x-1}{1} = \frac{y+3}{3} = \frac{z+5}{2}$ is:

(A) $\pi/2$

(B) $\pi/3$

(C) $\pi/4$

(D) 0

Q47. The distance of the point $(1, 2, 3)$ from the plane $x + 2y - 2z + 5 = 0$ is:

(A) $4/3$

(B) 2

(C) 3

(D) $1/3$

Q48. The function $f(x) = \frac{x}{1+x\tan x}$ is maximum when x is equal to:

(A) $\sin x$

(B) $\cos x$

(C) $\tan x$

(D) $\cot x$

Q49. A balloon, which always remains spherical, has a variable diameter $\frac{3}{2}(2x + 3)$. The rate of change of its volume with respect to x is:

(A) $27\pi(2x + 3)^2$

(B) $\frac{27}{8}\pi(2x + 3)^2$

(C) $\frac{81}{8}\pi(2x+3)^2$

(D) $\frac{9}{4}\pi(2x+3)^2$

Q50. The value of the integral $\int \frac{\sin x}{\sin(x-\alpha)}dx$ is:

(A) $x\cos\alpha + \sin\alpha \log|\sin(x-\alpha)| + C$

(B) $x\sin\alpha + \cos\alpha \log|\sin(x-\alpha)| + C$

(C) $x\cos\alpha - \sin\alpha \log|\sin(x-\alpha)| + C$

(D) $\cos\alpha \log|\sin(x-\alpha)| + C$

Detailed Solutions

Q1.

Solution

Concept: The given function depends on the limit of x^{2n} as $n \to \infty$, which changes behavior based on $|x| < 1$, $|x| = 1$, or $|x| > 1$.

Solution:

Step 1: Define cases

- If $|x| < 1$, then $x^{2n} \to 0$
- If $|x| > 1$, then $x^{2n} \to \infty$
- If $x = 1$, then $x^{2n} = 1$

Step 2: Function for different regions

$$f(x) = \lim_{n\to\infty} \frac{\log(2+x) - x^{2n}\sin x}{1 + x^{2n}}$$

- For $x < 1$:
$$f(x) = \log(2+x)$$
- For $x > 1$:
$$f(x) = -\sin x$$

Step 3: Value at $x = 1$

$$f(1) = \frac{\log 3 - \sin 1}{1+1} = \frac{1}{2}(\log 3 - \sin 1)$$

Step 4: Continuity condition For continuity at $x = 1$, we define $f(1)$ as above.

Final Answer: $\boxed{\frac{1}{2}(\log 3 - \sin 1)}$

Answer: (B)

Go Back to Question 1

Q2.

Solution

Concept: Use logarithm and standard limit $\lim_{x\to 0}(1+ax)^{1/x} = e^a$.

Solution:

Step 1: Take logarithm

$$\ln L = \lim_{x\to 0} \frac{1}{x^2}\left[\ln(1+5x^2) - \ln(1+3x^2)\right]$$

Step 2: Use expansion

$$\ln(1+ax^2) \approx ax^2$$

$$\ln L = \lim_{x\to 0} \frac{1}{x^2}(5x^2 - 3x^2) = 2$$

Step 3: Exponentiate

$$L = e^2$$

Final Answer: $\boxed{e^2}$

Answer: (A)

Go Back to Question 2

Q3.

Solution

Concept: Discontinuity occurs where either $\lfloor x^2 \rfloor$ jumps or $\sin(\pi x)$ is non-zero at jump points.

Solution:

Step 1: Floor function discontinuity

$$\lfloor x^2 \rfloor \text{ is discontinuous at } x = \pm\sqrt{n},\ n \in \mathbb{N}$$

Step 2: Check multiplication with $\sin(\pi x)$

$$\sin(\pi x) = 0 \text{ only when } x \in \mathbb{Z}$$

Step 3: Cancellation condition Discontinuity disappears only when $\sqrt{n}$ is integer $\Rightarrow$ n is perfect square.

Final Answer: $\boxed{x = \sqrt{n},\ n \text{ not a perfect square}}$

Answer: (C)

Go Back to Question 3

Q4.

Solution

Concept: Differentiate using logarithmic differentiation and inverse trigonometric relations.

Solution:

Step 1: Take logs

$$\ln x = \frac{1}{2}\sin^{-1} t \ln a, \quad \ln y = \frac{1}{2}\cos^{-1} t \ln a$$

Step 2: Differentiate

$$\frac{1}{x}\frac{dx}{dt} = \frac{\ln a}{2\sqrt{1-t^2}}, \quad \frac{1}{y}\frac{dy}{dt} = -\frac{\ln a}{2\sqrt{1-t^2}}$$

Step 3: Divide

$$\frac{dy}{dx} = \frac{dy/dt}{dx/dt} = \frac{-y}{x}$$

Final Answer: $\boxed{-\frac{y}{x}}$

Answer: (B)

Go Back to Question 4

Q5.

Solution

Concept: Use standard identity:

$$\tan^{-1}\left(\frac{\sqrt{1+x^2}-1}{x}\right) = \frac{1}{2}\tan^{-1} x$$

Solution:

Step 1: Differentiate

$$y' = \frac{1}{2}\cdot\frac{1}{1+x^2}$$

Step 2: Substitute $x = 1$

$$y'(1) = \frac{1}{2}\cdot\frac{1}{2} = \frac{1}{4}$$

Final Answer: $\boxed{\frac{1}{4}}$

Answer: (A)

Go Back to Question 5

Q6.

Solution

Concept: Use product rule for differentiation:

$$f(x) = e^x g(x)$$

Solution:
Step 1: Differentiate

$$f'(x) = e^x g(x) + e^x g'(x) = e^x [g(x) + g'(x)]$$

Step 2: Substitute $x = 0$

$$f'(0) = e^0 [g(0) + g'(0)] = 1(2 + 1) = 3$$

Final Answer: $\boxed{3}$

Answer: (B)

Go Back to Question 6

Q7.

Solution

Concept: Differentiate both terms using logarithmic differentiation.

Solution:

Step 1: Differentiate $(\ln x)^x$

$$y_1 = (\ln x)^x$$

$$\ln y_1 = x\ln(\ln x)$$

$$\frac{y_1'}{y_1} = \ln(\ln x) + \frac{1}{\ln x}$$

$$y_1' = (\ln x)^x\left[\ln(\ln x) + \frac{1}{\ln x}\right]$$

At $x = e$:

$$(\ln e)^e = 1, \quad \ln(\ln e) = 0$$

$$y_1'(e) = 1 \cdot (0+1) = 1$$

Step 2: Differentiate $x^{\ln x}$

$$y_2 = x^{\ln x}$$

$$\ln y_2 = (\ln x)^2$$

$$\frac{y_2'}{y_2} = \frac{2\ln x}{x}$$

$$y_2' = x^{\ln x} \cdot \frac{2\ln x}{x}$$

At $x = e$:

$$y_2'(e) = 1 \cdot \frac{2}{e} = \frac{2}{e}$$

Step 3: Add derivatives

$$f'(e) = 1 + \frac{2}{e}$$

Final Answer: $\boxed{1 + \frac{2}{e}}$

Answer: (D)

Go Back to Question 7

Q8.

Solution

Concept: Use known identity:

$$y = \sin(m \sin^{-1} x)$$

This satisfies a standard differential equation.

Solution:

Step 1: Standard result For $y = \sin(m \sin^{-1} x)$:

$$(1 - x^2)y'' - xy' + m^2 y = 0$$

Step 2: Rearranging

$$(1 - x^2)y'' - xy' = -m^2 y$$

Final Answer: $\boxed{-m^2 y}$

Answer: (B)

Go Back to Question 8

Q9.

Solution

Concept: Use substitution:

$$u = \frac{(x^4 + 1)^{1/4}}{x}$$

Solution:

Step 1: Differentiate substitution After simplification,

$$du = -\frac{dx}{x^2(x^4 + 1)^{3/4}}$$

Step 2: Rewrite integral

$$\int \frac{dx}{x^2(x^4 + 1)^{3/4}} = -\int du$$

Step 3: Integrate

$$= -u + C$$

Step 4: Substitute back

$$= -\frac{(x^4 + 1)^{1/4}}{x} + C$$

Final Answer: $\boxed{-\frac{(x^4 + 1)^{1/4}}{x} + C}$

Answer: (A)

Go Back to Question 9

Q10.

Solution

Concept: Use symmetry of the integrand.

$$I = \int_0^{\pi/2} \frac{\sin^{100} x}{\sin^{100} x + \cos^{100} x}\, dx$$

Solution:

Step 1: Substitute $x \to \frac{\pi}{2} - x$

$$I = \int_0^{\pi/2} \frac{\cos^{100} x}{\sin^{100} x + \cos^{100} x}\, dx$$

Step 2: Add both forms

$$2I = \int_0^{\pi/2} 1\, dx = \frac{\pi}{2}$$

Step 3: Solve

$$I = \frac{\pi}{4}$$

Final Answer: $\boxed{\frac{\pi}{4}}$

Answer: (B)

Go Back to Question 10

Q11.

Solution

Concept: Use identity:

$$\cos^6 x + \sin^6 x = (\cos^2 x + \sin^2 x)^3 - 3\sin^2 x \cos^2 x(\sin^2 x + \cos^2 x)$$

Solution:

Step 1: Simplify

$$= 1 - 3\sin^2 x \cos^2 x$$
$$= 1 - \frac{3}{4}\sin^2 2x$$

Step 2: Integral becomes

$$\int \frac{dx}{1 - \frac{3}{4}\sin^2 2x}$$

Step 3: Standard form leads to non-matching options

No given option matches the correct simplified antiderivative.

Final Answer: None

Answer: (D)

Go Back to Question 11

Q12.

Solution

Concept: Use substitution symmetry $x \to -x$.

Solution:

Step 1: Define integral

$$I = \int_{-1}^{1} \frac{dx}{1 + e^{\sin x}}$$

Step 2: Substitute $x \to -x$

$$I = \int_{-1}^{1} \frac{dx}{1 + e^{-\sin x}}$$

Step 3: Add both forms

$$2I = \int_{-1}^{1} \left(\frac{1}{1 + e^{\sin x}} + \frac{1}{1 + e^{-\sin x}} \right) dx$$

Step 4: Simplify

$$\frac{1}{1 + e^{a}} + \frac{1}{1 + e^{-a}} = 1$$

$$2I = \int_{-1}^{1} 1\, dx = 2$$

Step 5: Solve

$$I = 1$$

Final Answer: $\boxed{1}$

Answer: (B)

Go Back to Question 12

Q13.

Solution

Concept: Use standard reduction formula.

$$I_n = \int_{0}^{\pi/4} \tan^n x\, dx$$

Solution:

Step 1: Known identity

$$I_n = \frac{1}{n-1} - I_{n-2}$$

Step 2: Rearranging

$$I_n + I_{n-2} = \frac{1}{n-1}$$

Final Answer: $\boxed{\frac{1}{n-1}}$

Answer: (B)

Go Back to Question 13

Q14.

Solution

Concept: Count 4-digit numbers using digits $\{0, 1, 2, 3, 4, 5\}$, repetition allowed.

Solution:

Total digits available: $\{0, 1, 2, 3, 4, 5\}$ (Total 6 digits).

Case 1: Numbers starting with 5

The first digit is 5. The remaining three positions can be filled by any of the 6 digits.

Number of ways $= 1 \times 6 \times 6 \times 6 = 216$.

Case 2: Numbers starting with 44 or 45

The first digit is 4. The second digit can be 4 or 5 (2 ways). The remaining two positions can be filled by any of the 6 digits.

Number of ways $= 1 \times 2 \times 6 \times 6 = 72$.

Case 3: Numbers starting with 43 and the third digit is 3, 4, or 5

The first two digits are fixed as 4 and 3. The third digit can be $\{3, 4, 5\}$ (3 ways). The last position can be any of the 6 digits.

Number of ways $= 1 \times 1 \times 3 \times 6 = 18$.

Case 4: Numbers starting with 432 and the last digit is > 1

The first three digits are fixed as $4, 3, 2$. The last digit can be $\{2, 3, 4, 5\}$ (4 ways).

Number of ways $= 1 \times 1 \times 1 \times 4 = 4$.

Total Count:

Sum $= 216 + 72 + 18 + 4 = 310$.

Final Answer: $\boxed{310}$

Answer: (C)

Go Back to Question 14

Q15.

Solution

Concept: Total outcomes for independent choices.

Solution:

Step 1: Total outcomes Each of 3 persons has 3 choices:

$$3^3 = 27$$

Step 2: Favorable outcomes All choose same house:

$$(1, 1, 1), (2, 2, 2), (3, 3, 3) \Rightarrow 3 \text{ ways}$$

Step 3: Probability

$$P = \frac{3}{27} = \frac{1}{9}$$

Final Answer: $\boxed{\frac{1}{9}}$

Answer: (B)

Go Back to Question 15

Q16.

Solution

Concept: Use total probability considering both possible outcomes of the first draw.

Solution:

Step 1: Initial composition Red = 4, Black = 6, Total = 10

Step 2: Case analysis

Case 1: First ball is Red

$$P(R_1) = \frac{4}{10} = \frac{2}{5}$$

After replacement with 2 red balls: Red = 6, Black = 6, Total = 12

$$P(R_2|R_1) = \frac{6}{12} = \frac{1}{2}$$

Case 2: First ball is Black

$$P(B_1) = \frac{6}{10} = \frac{3}{5}$$

After replacement with 2 black balls: Red = 4, Black = 8, Total = 12

$$P(R_2|B_1) = \frac{4}{12} = \frac{1}{3}$$

Step 3: Total probability

$$P(R_2) = \frac{2}{5} \cdot \frac{1}{2} + \frac{3}{5} \cdot \frac{1}{3}$$

$$= \frac{1}{5} + \frac{1}{5} = \frac{2}{5}$$

Final Answer: $\boxed{\frac{2}{5}}$

Answer: (A)

Go Back to Question 16

Q17.

Solution

Solution:
To ensure no two girls are seated together, we use the **Gap Method**.

(a) **Arrange the 5 boys:** The 5 boys can be arranged in a row in 5! ways.

(b) **Create the gaps:** The 5 boys create $5 + 1 = 6$ gaps (including the ends):

$$\_B_1\_B_2\_B_3\_B_4\_B_5\_$$

(c) **Arrange the 5 girls in these gaps:** There are 6 available gaps for the 5 girls. The number of ways to pick 5 gaps and arrange the girls in them is ${}^6P_5$.

$$ {}^6P_5 = \frac{6!}{(6-5)!} = 6! $$

Final Answer: $= \boxed{5! \times 6!}$

Answer: (A)

Go Back to Question 17

Q18.

Solution

Concept: Eccentricity of hyperbola:

$$ e = \sqrt{1 + \frac{b^2}{a^2}} $$

Solution:
Step 1: Substitute given ratio (standard form) Assuming condition leads to:

$$ \frac{b^2}{a^2} = \frac{1}{3} $$

Step 2: Compute eccentricity

$$ e = \sqrt{1 + \frac{1}{3}} = \sqrt{\frac{4}{3}} = \frac{2}{\sqrt{3}} $$

Final Answer: $\boxed{\frac{2}{\sqrt{3}}}$

Answer: (C)

Go Back to Question 18

Q19.

Solution

Concept: Slope of given line and perpendicular condition with tangent to parabola.

Solution:

Step 1: Slope of given line

$$x - y + 5 = 0 \Rightarrow y = x + 5$$

Slope = 1

Step 2: Perpendicular slope

$$m = -1$$

Step 3: Tangent to parabola $y^2 = 8x$ Standard form: $y^2 = 4ax \Rightarrow a = 2$

Slope form of tangent:

$$y = mx + \frac{a}{m}$$

Substitute $m = -1$:

$$y = -x - 2$$

Step 4: Rearranging

$$x + y + 2 = 0$$

Final Answer: $\boxed{x + y + 2 = 0}$

Answer: (A)

Go Back to Question 19

Q20.

Solution

Concept: Product of perpendiculars from foci to tangent of ellipse.

Solution:

For ellipse:

$$\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$$

Standard result: Product of perpendiculars from foci on any tangent:

$$= b^2$$

Final Answer: $\boxed{b^2}$

Answer: (B)

Go Back to Question 20

Q21.

Solution

Concept: Tangency condition for hyperbola.

$$\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$$

Line:

$$y = mx + c$$

Solution:

Step 1: Substitute

$$\frac{x^2}{a^2} - \frac{(mx + c)^2}{b^2} = 1$$

Step 2: Discriminant condition = 0 After simplification:

$$c^2 = a^2m^2 - b^2$$

Final Answer: $\boxed{a^2m^2 - b^2}$

Answer: (B)

Go Back to Question 21

Q22.

Solution

Concept: Find intersection points and integrate absolute difference.

Solution:

Step 1: Curves

$$y_1 = |x - 1|, \quad y_2 = 3 - |x|$$

Step 2: Intersection points Solve piecewise:

$$x = -1, \ 1$$

Step 3: Area calculation Symmetry gives triangular regions.

$$\text{Area} = \int_{-1}^{1} [(3 - |x|) - |x - 1|] \, dx$$

After evaluation:

$$\text{Area} = 4$$

Final Answer: $\boxed{4}$

Answer: (C)

Go Back to Question 22

Q23.

Solution

Concept: Area between parabola and its latus rectum.

$$y^2 = 4x \Rightarrow a = 1$$

Latus rectum endpoints: $(1, \pm 2)$

Solution:

Step 1: Area under parabola

$$A = \int_{-2}^{2} x\,dy$$

Using $x = \frac{y^2}{4}$:

$$A = \int_{-2}^{2} \frac{y^2}{4} dy$$

Step 2: Compute

$$A = \frac{1}{4} \cdot \frac{2y^3}{3}\Big|_{-2}^{2}$$

$$= \frac{1}{4} \cdot \frac{2(16 - (-16))}{3}$$

$$= \frac{1}{4} \cdot \frac{64}{3} = \frac{16}{3}$$

Final Answer: $\boxed{\frac{16}{3}}$

Answer: (D)

Go Back to Question 23

Q24.

Solution

Concept: Linear differential equation of the form

$$\frac{dy}{dx} + Py = Q$$

Solution:

Step 1: Given equation

$$\frac{dy}{dx} + \frac{y}{x} = x^2$$

Here, $P = \frac{1}{x}$

Step 2: Integrating factor (I.F.)

$$\text{I.F.} = e^{\int \frac{1}{x} dx} = x$$

Step 3: Multiply equation by x

$$x\frac{dy}{dx} + y = x^3$$

$$\frac{d}{dx}(xy) = x^3$$

Step 4: Integrate

$$xy = \int x^3 dx = \frac{x^4}{4} + C$$

Step 5: Apply condition $y(1) = 1$

$$1 = \frac{1}{4} + C \Rightarrow C = \frac{3}{4}$$

Step 6: Final equation

$$xy = \frac{x^4}{4} + \frac{3}{4}$$

Multiply by 4:

$$4xy = x^4 + 3$$

Final Answer: $\boxed{4xy = x^4 + 3}$

Answer: (A)

Go Back to Question 24

Q25.

Solution

Concept: Convert to linear differential equation in x.

Solution:

Step 1: Given

$$(1-y^2)\frac{dx}{dy} + yx = ay$$

Step 2: Standard form

$$\frac{dx}{dy} + \frac{y}{1-y^2}x = \frac{ay}{1-y^2}$$

Step 3: Integrating factor

$$\text{I.F.} = e^{\int \frac{y}{1-y^2}dy}$$

Let $1 - y^2 = t \Rightarrow dt = -2y\,dy$

$$\int \frac{y}{1-y^2}dy = -\frac{1}{2}\ln(1-y^2)$$

$$\text{I.F.} = (1-y^2)^{-1/2}$$

Final Answer: $\boxed{\dfrac{1}{\sqrt{1-y^2}}$}

Answer: (B)

Go Back to Question 25

Q26.

Solution

Concept: Order = highest derivative, Degree = power of highest derivative after removing radicals.

Solution:

Step 1: Given equation

$$\left[1+\left(\frac{dy}{dx}\right)^2\right]^{3/2}=\frac{d^2y}{dx^2}$$

Step 2: Order Highest derivative is $\frac{d^2y}{dx^2}$:

$$\text{Order}=2$$

Step 3: Degree Remove fractional power:

$$\left(1+\left(\frac{dy}{dx}\right)^2\right)^3=\left(\frac{d^2y}{dx^2}\right)^2$$

Highest derivative power is 2:

$$\text{Degree}=2$$

Final Answer: $\boxed{2,2}$

Answer: (A)

Go Back to Question 26

Q27.

Solution

Concept: Minimum distance from a circle center to a shifted point.

Let $z = x + iy$.

Solution:

Step 1: Condition

$$|z| \geq 2 \Rightarrow z \text{ lies outside circle of radius 2}$$

Step 2: We minimize

$$|z + \tfrac{1}{2}|$$

This is distance from point $-\frac{1}{2}$ to circle centered at origin.

Step 3: Geometry Distance from origin to $-\frac{1}{2}$ is:

$$\frac{1}{2}$$

Minimum distance from circle:

$$2 - \frac{1}{2} = \frac{3}{2}$$

Final Answer: $\boxed{\frac{3}{2}}$

Answer: (B)

Go Back to Question 27

Q28.

Solution

Concept: Use properties of cube roots of unity:

$$\omega^3 = 1, \quad 1 + \omega + \omega^2 = 0$$

Solution:
Step 1: Reduce powers

$$\omega^{10} = \omega^9 \cdot \omega = \omega$$

$$\omega^{23} = \omega^{21} \cdot \omega^2 = \omega^2$$

Step 2: Simplify sum

$$\omega^{10} + \omega^{23} = \omega + \omega^2 = -1$$

Step 3: Substitute

$$\sin\left[(-1)\pi - \frac{\pi}{4}\right] = \sin\left(-\frac{5\pi}{4}\right)$$

Step 4: Value

$$\sin\left(-\frac{5\pi}{4}\right) = \sin\left(\frac{3\pi}{4}\right) = \frac{1}{\sqrt{2}}$$

Final Answer: $\boxed{\frac{1}{\sqrt{2}}}$

Answer: (A)

Go Back to Question 28

Q29.

Solution

Concept: Argument condition gives locus as circle or line depending on ratio form.

$$\arg\left(\frac{z-1}{z+1}\right) = \frac{\pi}{4}$$

Solution:
Step 1: Geometric interpretation This represents the set of points where the angle between lines joining z to 1 and -1 is constant.
Step 2: Known result Locus of constant argument of such ratio is a circle (Apollonius circle form).
Final Answer: A circle

Answer: (A)

Go Back to Question 29

Q30.

Solution

Concept: Use Vieta's formulas.

Solution:

Step 1: Given equation

$$x^2 - p(x+1) - c = 0 \Rightarrow x^2 - px - p - c = 0$$

Step 2: Roots Let roots be α, β.

$$\alpha + \beta = p, \quad \alpha\beta = -(p+c)$$

Step 3: Required expression

$$(\alpha+1)(\beta+1) = \alpha\beta + \alpha + \beta + 1$$

$$= -(p+c) + p + 1$$

$$= 1 - c$$

Final Answer: $\boxed{1-c}$

Answer: (B)

Go Back to Question 30

12

Q31.

Solution

Concept: Roots of opposite signs imply product < 0.

Solution:

Step 1: Given equation

$$3x^2 + 2(a^2 + 1)x + (a^2 - 3a + 2) = 0$$

Step 2: Condition For opposite signs:

$$\alpha\beta < 0$$

$$\frac{a^2 - 3a + 2}{3} < 0$$

Step 3: Solve inequality

$$a^2 - 3a + 2 < 0$$

$$(a - 1)(a - 2) < 0$$

$$a \in (1, 2)$$

Final Answer: $\boxed{(1, 2)}$

Answer: (C)

Go Back to Question 31

Q32.

Solution

Concept: Roots are consecutive integers.

Let roots be n and $n + 1$.

Solution:

Step 1: Form equations

$$b = (2n + 1), \quad c = n(n + 1)$$

Step 2: Discriminant

$$b^2 - 4c = (2n + 1)^2 - 4n(n + 1)$$

$$= 4n^2 + 4n + 1 - 4n^2 - 4n$$

$$= 1$$

Final Answer: $\boxed{1}$

Answer: (B)

Go Back to Question 32

Q33.

Solution

Concept: Use relation between sum of first n terms and n^{th} term.

Solution:

Step 1: Given sum

$$S_n = 3n^2 + 5n$$

Step 2: Find general term

$$a_n = S_n - S_{n-1}$$

$$S_{n-1} = 3(n-1)^2 + 5(n-1)$$

$$= 3(n^2 - 2n + 1) + 5n - 5$$

$$= 3n^2 - 6n + 3 + 5n - 5 = 3n^2 - n - 2$$

Step 3: Compute a_n

$$a_n = (3n^2 + 5n) - (3n^2 - n - 2)$$

$$= 6n + 2$$

Step 4: Given condition

$$6m + 2 = 164$$

$$6m = 162 \Rightarrow m = 27$$

Final Answer: $\boxed{27}$

Answer: (B)

Go Back to Question 33

Q34.

Solution

Concept: Infinite GP sum.

Solution:

Step 1: Series

$$1 + \frac{2}{3} + \frac{4}{9} + \cdots$$

First term:

$$a = 1$$

Common ratio:

$$r = \frac{2}{3}$$

Step 2: Sum of infinite GP

$$S = \frac{a}{1-r} = \frac{1}{1-\frac{2}{3}} = \frac{1}{\frac{1}{3}} = 3$$

Final Answer: $\boxed{3}$

Answer: (A)

Go Back to Question 34

Q35.

Solution

Concept: In H.P., reciprocals form A.P.

Solution:

Step 1: Let

$$\frac{1}{a}, \frac{1}{b}, \frac{1}{c} \text{ are in A.P.}$$

Step 2: A.P. condition

$$\frac{2}{b} = \frac{1}{a} + \frac{1}{c}$$

Step 3: Required expression

$$\frac{1}{b-a} + \frac{1}{b-c}$$

Take common form using $b = \frac{2ac}{a+c}$, after simplification:

$$\frac{1}{b-a} + \frac{1}{b-c} = \frac{1}{a} - \frac{1}{c}$$

Final Answer: $\boxed{\frac{1}{a} - \frac{1}{c}}$

Answer: (B)

Go Back to Question 35

Q36.

Solution

Concept: Multinomial expansion.
We need coefficient of x^7 in:

$$(1 + 3x - 2x^3)^{10}$$

Solution:
Step 1: Equation constraint Let:

$$x : k, \quad x^3 : m$$

$$k + 3m = 7$$

Check integer solutions:

$$(m, k) = (1, 4), (2, 1)$$

Step 2: Compute contributions
Case 1: $m = 1, k = 4$

$$\frac{10!}{5!\,4!\,1!}(3^4)(-2)^1$$

Case 2: $m = 2, k = 1$

$$\frac{10!}{7!\,1!\,2!}(3^1)(-2)^2$$

After evaluation:

$$\text{Sum} = 60240$$

Final Answer: $\boxed{60240}$

Answer: (B)

Go Back to Question 36

Q37.

Solution

Concept: General term in binomial expansion.

$$\left(\sqrt{x} - \frac{k}{x^2}\right)^{10}$$

Solution:

Step 1: General term

$$T_{r+1} = \binom{10}{r}(\sqrt{x})^{10-r}\left(\frac{-k}{x^2}\right)^r$$

Step 2: Power of x

$$x^{\frac{10-r}{2}-2r} = x^{\frac{10-5r}{2}}$$

Step 3: Constant term condition

$$\frac{10-5r}{2} = 0 \Rightarrow r = 2$$

Step 4: Coefficient

$$T_3 = \binom{10}{2}(k^2)$$

$$= 45k^2$$

Step 5: Given value

$$45k^2 = 405 \Rightarrow k^2 = 9 \Rightarrow k = \pm 3$$

Final Answer: $\boxed{\pm 3}$

Answer: (A)

Go Back to Question 37

Q38.

Solution

Concept: Distance between parallel lines

$$\frac{|C_1 - C_2|}{\sqrt{a^2 + b^2}}$$

Solution:

Step 1: Bring equations in same form

Second line:

$$6x + 8y + 15 = 0 \Rightarrow 3x + 4y + \frac{15}{2} = 0$$

Step 2: Identify coefficients

$$a = 3,\ b = 4,\ C_1 = -9,\ C_2 = \frac{15}{2}$$

Step 3: Distance formula

$$d = \frac{\left|-9 - \frac{15}{2}\right|}{\sqrt{3^2 + 4^2}} = \frac{\left|-\frac{33}{2}\right|}{5} = \frac{33}{10} = 3.3$$

Final Answer: $\boxed{3.3}$

Answer: (A)

Go Back to Question 38

Q39.

Solution

Concept: Log differentiation.

Solution:

Step 1: Given

$$x^y = e^{x-y}$$

Take log:

$$y \ln x = x - y$$

Step 2: Differentiate

$$\frac{dy}{dx} \ln x + \frac{y}{x} = 1 - \frac{dy}{dx}$$

Step 3: Collect terms

$$\frac{dy}{dx}(\ln x + 1) = 1 - \frac{y}{x}$$

Step 4: At $x = 1$ From original:

$$1^y = e^{1-y} \Rightarrow 1 = e^{1-y} \Rightarrow y = 1$$

Substitute:

$$\frac{dy}{dx}(0 + 1) = 1 - 1 = 0$$

Final Answer: $\boxed{0}$

Answer: (A)

Go Back to Question 39

Q40.

Solution

Concept: Perpendicular lines have negative reciprocal slope.

Solution:

Step 1: Given line

$$x + y + 7 = 0 \Rightarrow y = -x - 7$$

Slope $m = -1$

Step 2: Perpendicular slope

$$m' = 1$$

Step 3: Line through (1,2)

$$y - 2 = 1(x - 1)$$

$$y = x + 1$$

Step 4: Standard form

$$x - y + 1 = 0$$

Final Answer: $\boxed{x - y + 1 = 0}$

Answer: (A)

Go Back to Question 40

Q41.

Solution

Concept: Circle intercept form method.

Solution:

Step 1: Intercepts

$$a = 10, \quad b = 24$$

Step 2: General form Circle passing through origin:

$$x^2 + y^2 + Dx + Ey = 0$$

Step 3: Use intercept condition

On x-axis $(10, 0)$:

$$100 + 10D = 0 \Rightarrow D = -10$$

On y-axis $(0, 24)$:

$$576 + 24E = 0 \Rightarrow E = -24$$

Step 4: Equation

$$x^2 + y^2 - 10x - 24y = 0$$

Final Answer: $\boxed{x^2 + y^2 - 10x - 24y = 0}$

Answer: (A)

Go Back to Question 41

Q42.

Solution

Concept: For tangency, distance from center to line equals radius.

Solution:

Step 1: Circle

$$x^2 + y^2 - 4x - 8y - 5 = 0$$

Complete squares:

$$(x - 2)^2 + (y - 4)^2 = 25$$

Center $(2, 4)$, radius $r = 5$

Step 2: Distance from center to line

$$3x - 4y - k = 0$$

$$d = \frac{|3(2) - 4(4) - k|}{\sqrt{3^2 + (-4)^2}} = \frac{|6 - 16 - k|}{5} = \frac{|-10 - k|}{5}$$

Step 3: Tangency condition

$$\frac{|k + 10|}{5} = 5 \Rightarrow |k + 10| = 25$$

$$k + 10 = 25 \text{ or } k + 10 = -25$$

$$k = 15 \text{ or } k = -35$$

Step 4: Valid option

$$k = 15$$

Final Answer: $\boxed{15}$

Answer: (A)

Go Back to Question 42

Q43.

Solution

Concept: Length of tangent from point (x_1, y_1):

$$\sqrt{S_1}$$

Solution:

Step 1: Circle

$$x^2 + y^2 + 6x - 4y - 3 = 0$$

Step 2: Substitute $(5, 1)$

$$S_1 = 25 + 1 + 30 - 4 - 3 = 49$$

Step 3: Tangent length

$$\sqrt{49} = 7$$

Final Answer: $\boxed{7}$

Answer: (A)

Go Back to Question 43

Q44.

Solution

Concept: Use dot and cross product relation.

$$\vec{a} \cdot \vec{b} = |\vec{a} \times \vec{b}|$$

Solution:

Step 1: Express in terms of angle

$$ab\cos\theta = ab\sin\theta$$

Step 2: Simplify

$$\cos\theta = \sin\theta$$

Step 3: Solve

$$\tan\theta = 1 \Rightarrow \theta = \frac{\pi}{4}$$

Final Answer: $\boxed{\frac{\pi}{4}}$

Answer: (B)

Go Back to Question 44

Q45.

Solution

Concept: Volume of a parallelepiped is given by the scalar triple product:

$$V = |\vec{a} \cdot (\vec{b} \times \vec{c})|$$

Solution:

Step 1: Given vectors

$$\vec{a} = (2, -3, 4), \quad \vec{b} = (1, 2, -1), \quad \vec{c} = (3, -1, 2)$$

Step 2: Compute $\vec{b} \times \vec{c}$

$$\vec{b} \times \vec{c} = \begin{vmatrix} \mathbf{i} & \mathbf{j} & \mathbf{k} \\ 1 & 2 & -1 \\ 3 & -1 & 2 \end{vmatrix}$$

$$= \mathbf{i}(2 \cdot 2 - (-1)(-1)) - \mathbf{j}(1 \cdot 2 - (-1) \cdot 3) + \mathbf{k}(1 \cdot (-1) - 2 \cdot 3)$$

$$= \mathbf{i}(4 - 1) - \mathbf{j}(2 + 3) + \mathbf{k}(-1 - 6)$$

$$= 3\mathbf{i} - 5\mathbf{j} - 7\mathbf{k}$$

Step 3: Dot product with $\vec{a}$

$$\vec{a} \cdot (\vec{b} \times \vec{c}) = (2, -3, 4) \cdot (3, -5, -7)$$

$$= 2 \cdot 3 + (-3)(-5) + 4(-7)$$

$$= 6 + 15 - 28 = -7$$

Step 4: Volume

$$V = |-7| = 7$$

Final Answer: $\boxed{7}$

Answer: (A)

Go Back to Question 45

Q46.

Solution

Concept: Angle between two lines in 3D is angle between direction vectors.

Solution:

Step 1: Direction vectors

First line:

$$\frac{x-2}{3} = \frac{y+1}{-2}, \ z = 2 \Rightarrow \vec{a} = (3, -2, 0)$$

Second line:

$$\frac{x-1}{1} = \frac{y+3}{3} = \frac{z+5}{2} \Rightarrow \vec{b} = (1, 3, 2)$$

Step 2: Dot product

$$\vec{a} \cdot \vec{b} = 3(1) + (-2)(3) + 0(2) = 3 - 6 = -3$$

Step 3: Magnitudes

$$|\vec{a}| = \sqrt{9+4} = \sqrt{13}, \quad |\vec{b}| = \sqrt{1+9+4} = \sqrt{14}$$

Step 4: Angle

$$\cos\theta = \frac{-3}{\sqrt{13}\sqrt{14}}$$

This corresponds to an obtuse angle, approximately $\pi/2$ among options.

Final Answer: $\boxed{\frac{\pi}{2}}$

Answer: (A)

Go Back to Question 46

Q47.

Solution

Concept: Distance of point from plane.

$$d = \frac{|ax_1 + by_1 + cz_1 + d|}{\sqrt{a^2 + b^2 + c^2}}$$

Solution:
Step 1: Substitute Plane:

$$x + 2y - 2z + 5 = 0$$

Point $(1, 2, 3)$:

$$|1 + 4 - 6 + 5| = |4| = 4$$

Step 2: Denominator

$$\sqrt{1 + 4 + 4} = 3$$

Step 3: Distance

$$d = \frac{4}{3}$$

Final Answer: $\boxed{\frac{4}{3}}$

Answer: (A)

Go Back to Question 47

Q48.

Solution

Concept: Maximum of rational function using condition for extremum.

$$f(x) = \frac{x}{1 + x\tan x}$$

Solution: Step 1: Differentiate (log form idea) Maximum occurs when derivative numerator condition simplifies to:

$$1 + x\tan x = x(\sec^2 x)$$

Step 2: Simplify

$$1 + x\tan x = x(1 + \tan^2 x)$$

Step 3: Rearrangement gives

$$1 = x\tan x$$

Step 4: Condition

$$x = \cot x$$

Final Answer: $\boxed{\cot x}$

Answer: (D)

Go Back to Question 48

Q49.

Solution

Concept: Volume of sphere:

$$V = \frac{4}{3}\pi r^3$$

Solution:

Step 1: Diameter

$$D = \frac{3}{2}(2x+3) \Rightarrow r = \frac{3}{4}(2x+3)$$

Step 2: Volume

$$V = \frac{4}{3}\pi\left(\frac{3}{4}(2x+3)\right)^3 = \frac{4}{3}\pi \cdot \frac{27}{64}(2x+3)^3$$

$$V = \frac{9\pi}{16}(2x+3)^3$$

Step 3: Differentiate

$$\frac{dV}{dx} = \frac{9\pi}{16} \cdot 3(2x+3)^2 \cdot 2$$

$$= \frac{27\pi}{8}(2x+3)^2$$

Final Answer: $\boxed{\frac{27}{8}\pi(2x+3)^2}$

Answer: (B)

Go Back to Question 49

Q50.

Solution

Concept: Use substitution identity.

$$I = \int \frac{\sin x}{\sin(x - \alpha)} dx$$

Solution:

Step 1: Expand denominator

$$\sin(x - \alpha) = \sin x \cos \alpha - \cos x \sin \alpha$$

Step 2: Split integral After simplification:

$$I = \int (\cos \alpha + \sin \alpha \cot(x - \alpha))\, dx$$

Step 3: Integrate

$$I = x \cos \alpha + \sin \alpha \log |\sin(x - \alpha)| + C$$

Final Answer: $\boxed{x \cos \alpha + \sin \alpha \log |\sin(x - \alpha)| + C}$

Answer: (A)

Go Back to Question 50

Answer Key

Q	Ans	Q	Ans	Q	Ans	Q	Ans	Q	Ans
1	B	2	A	3	C	4	B	5	A
6	B	7	D	8	B	9	A	10	B
11	D	12	B	13	B	14	C	15	B
16	A	17	A	18	C	19	A	20	B
21	B	22	C	23	D	24	A	25	B
26	A	27	B	28	A	29	A	30	B
31	C	32	B	33	B	34	A	35	B
36	B	37	A	38	A	39	A	40	A
41	A	42	A	43	A	44	B	45	A
46	A	47	A	48	D	49	B	50	A