

# CBSE Class 12 Mathematics

## (SET-9) Answers key

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### Section A – MCQ Answers

1. 40
  2.  $2xe^{x^2}$
  3. 2,3
  4.  $0^\circ$
  5.  $5/2$
  6. 0.65
  7.  $1/2$
  8.  $A^T = -A$
  9. 13
  10. 40
  11.  $\sec x \tan x$
  12.  $\tan^{-1} x + C$
  13.  $P(A \cup B) = P(A) + P(B)$
  14. 5
  15. 8
  16.  $\pm 1$
  17.  $x^6 + C$
  18. 0
  19.  $e - 1$
  20. 5
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### Section B

#### 21. Inverse

$$|A| = (1 \times 5 - 3 \times 2) = -1$$

$$A^{-1} = \begin{bmatrix} -5 & 3 \\ 2 & -1 \end{bmatrix}$$

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## 22. Differentiation

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

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## 23. Normal Equation

$$y - 1 = -\frac{1}{2}(x - 1)$$

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## 24. Integration

$$= x^5 - x^3 + C$$

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## 25. Unit Vector

$$\frac{2}{3}i + \frac{2}{3}j + \frac{1}{3}k$$

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## 26. Probability

$$= 1/26$$

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## Section C

### 27. Solution

$$x = 2$$

$$y = 1$$

$$z = 3$$

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**28. Differentiation**

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

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**29. Definite Integral**

$$= e^2 - 1$$

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**30. Collinear**

Yes (Scalar multiples)

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**31. Probability**

$$= 75/216$$

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**32. Differential Equation**

$$y = Ce^{-3x}$$

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**33. Area**

$$= 32/3$$

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**34. Sphere Equation**

$$(x - 1)^2 + (y - 2)^2 + (z - 2)^2 = 9$$

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**Section D**

35.

$$\text{adj}(A) = \begin{bmatrix} 3 & -1 & -1 \\ -1 & 3 & -1 \\ -1 & -1 & 3 \end{bmatrix}$$
$$A^{-1} = \frac{1}{4} \text{adj}(A)$$

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36.

$$c = \sqrt{\frac{7}{3}}$$

Verified.

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37.

$$\int x^2 e^x dx = e^x(x^2 - 2x + 2) + C$$

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38.

Shortest distance = 2

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39.

Mean =  $7/2$

Variance =  $7/4$

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40.

$$y = Ce^{2x} + xe^{2x}$$