

PRACTICE WORKBOOK

CLASS 12

Mathematics

Selected board-year skills in functions, matrices, calculus, vectors, linear programming and conditional probability, with original worked solutions for CBSE 2026–27.

**6 practice units****36 tasks with answer guidance**

Name / नाम: _____

Original selected-topic practice. Use alongside school lessons and the prescribed textbook. The contents define this book's scope.

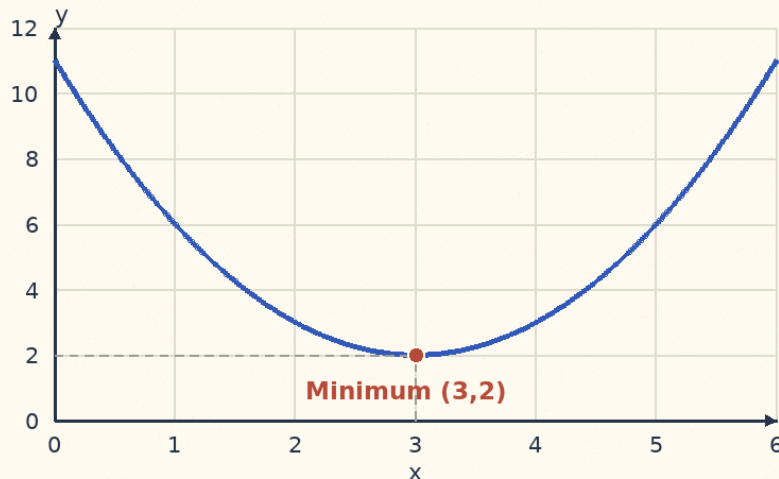
CBSE course 041 · 2026–27 · Selected practice, not a complete syllabus or official examination paper.

UNIT 02 · LOOK & EXPLAIN

Continuity, differentiation and decisions

A stationary point can be a minimum

Worked example: $f(x) = x^2 - 6x + 11$



$$f(x) = (x - 3)^2 + 2$$

$$f'(x) = 2x - 6$$

$$f'(3) = 0$$

$$f''(x) = 2 > 0$$

Minimum value: 2
attained at $x = 3$

The completed square is nonnegative, so the minimum is global on the real line.

Use the labels and worked example to explain the idea. The diagram is schematic unless a scale is given.

Look, annotate and explain

Identify the parts or values that matter. Add a label or annotation to show a connection. Explain how the diagram supports the worked example, then use it with the practice on the next page.

UNIT 01 · APPLY & EXPLAIN

Functions, inverse values and matrix structure

4. For $A = \begin{bmatrix} 1 & 2 \\ 0 & 1 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & 0 \\ 3 & 1 \end{bmatrix}$, calculate AB and BA . [3 marks]

5. Find the inverse of $A = \begin{bmatrix} 3 & 1 \\ 2 & 1 \end{bmatrix}$. [2 marks]

6. Solve $3x + y = 7$ and $2x + y = 5$ using the inverse matrix from the preceding question. [3 marks]

Show your thinking with a drawing, diagram or explanation.

Pause & reflect

What can I explain now? What will I try again?

☐ I tried ☐ I explained ☐ I checked



UNIT 01 · ANSWER GUIDANCE

Functions, inverse values and matrix structure

1. If $3a - 2 = 3b - 2$, then $a = b$, so one-to-one. For any real y , choose $x = (y + 2)/3$; $f(x) = y$, so onto.
2. Reflexive: $a - a = 0$ is divisible by 3. Symmetric: if $a - b$ is divisible by 3, so is its negative $b - a$. Transitive: add $a - b$ and $b - c$ to get $a - c$. All three hold.
3. $\sin(5\pi/6) = 1/2$, so $\sin^{-1}(1/2) = \pi/6$. $\tan^{-1}(1) = \pi/4$.
4. $AB = \begin{bmatrix} 7 & 2 \\ 3 & 1 \end{bmatrix}$. $BA = \begin{bmatrix} 1 & 2 \\ 3 & 7 \end{bmatrix}$. They differ, illustrating noncommutativity.
5. $\det A = 3 - 2 = 1$. $A^{-1} = \begin{bmatrix} 1 & -1 \\ -2 & 3 \end{bmatrix}$.
6. $\begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} 1 & -1 \\ -2 & 3 \end{bmatrix} \begin{bmatrix} 7 \\ 5 \end{bmatrix} = \begin{bmatrix} 2 \\ 1 \end{bmatrix}$. Thus $x = 2$, $y = 1$; substitution checks both equations.

Teaching note

Give the codomain when claiming onto; matrix multiplication must respect dimensions.

Curriculum reference: https://cbseacademic.nic.in/web_material/CurriculumMain27/SecPart2/Maths_SecP2_2026-27.pdf

Selected units; outcomes are publisher-defined. Practical, project and prescribed literature requirements must also be studied through school.