① Use the given inverse to solve $Ax = b$:

Since $x = A^{-1}b$, and we're given

$$A^{-1} = \begin{pmatrix} 5 & 2 & 0 \\ 1 & -2 & 3 \\ -1 & 2 & 2 \end{pmatrix}, \quad b = \begin{pmatrix} 1 \\ -1 \\ 3 \end{pmatrix}$$

We compute $x = A^{-1}b$

② Multiply out to find each component:

$$x_1 = 5 \cdot 1 + 2 \cdot (-1) + 0 \cdot 3 = 5 - 2 + 0 = 3$$

$$x_2 = 1 \cdot 1 + (-2) \cdot (-1) + 3 \cdot 3 = 1 + 2 + 9 = 12$$

$$x_3 = -1 \cdot 1 + 2 \cdot (-1) + 2 \cdot 3 = -1 - 2 + 6 = 3$$

③ Assemble the solution vector:

$$x = \begin{pmatrix} x_1 \\ x_2 \\ x_3 \end{pmatrix} = \begin{pmatrix} 3 \\ 12 \\ 3 \end{pmatrix}$$