

Matrix- Supplement Solution Set

See If You Need This Video!

1. Answer: A.

$$\begin{array}{rcccl} \text{Column} & 1 & 2 & 3 & 4 \\ \text{Row 1} & 7 & 8 & 9 & 0 \\ \text{Row 2} & a & i & j & k \\ \text{Row 3} & 1 & 2 & 3 & 4 \end{array}$$

No matter what symbols or numbers are inside the matrix, they are just elements.

«Basic structure of matrix»

Episode 1- Cantonese: 0:58 English: 0:50 Putonghua: 0:55

2. Answer: C.

M_{23} is the element at row 2, column 3, thus $M_{23} = j$.

«Basic structure of matrix»

Episode 1- Cantonese: 0:58 English: 0:50 Putonghua: 0:55

3. Answer: D.

Simply sum the elements at the same position.

«Summation and subtraction of matrices»

Episode 1- Cantonese: 2:11 English: 1:50 Putonghua: 2:05

4. Answer: B.

Please refer the the video for a clearer explanation.

In short:

$$(AB)_{ij} = \sum_n A_{in} B_{nj}$$

«Multiplication»

Episode 1- Cantonese: 2:28 English: 2:10 Putonghua: 2:25

5. Answer: E.

$$\mathbf{0} = \begin{pmatrix} 0 & 0 \\ 0 & 0 \end{pmatrix}$$

Since $\mathbf{A}$ and $\mathbf{B}$ are also a 2×2 matrices.

$$\mathbf{A0} = \mathbf{B0} = \mathbf{0}$$

$$\mathbf{B} + \mathbf{0} = \mathbf{B}$$

«Zero matrix»

Episode 1- Cantonese: 6:22 English: 5:46 Putonghua: 6:39

6. Answer: E.

$$\mathbf{I} = \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}$$

Since $\mathbf{B}$ is also a 2×2 matrix.

$$\mathbf{BI} = \mathbf{IB} = \mathbf{B}$$

Also, $\mathbf{B}^{-1}$ means the inverse of $\mathbf{B}$.

$$\mathbf{BB}^{-1} = \mathbf{I}$$

«Identity matrix»

Episode 1- Cantonese: 7:17 English: 6:36 Putonghua: 7:22

«Introduction to inverse matrix»

Episode 1- Cantonese: 7:42 English: 7:12 Putonghua: 7:45

7. Answer: B.

Please refer the the video for a clearer explanation.

$$\begin{aligned} |\mathbf{P}| &= (-5)(-8) - (-6)(-7) \\ &= -2 \end{aligned}$$

«Determinant of 2×2 matrix»

Episode 2- Cantonese: 1:10 English: 1:04 Putonghua: 1:01

8. Answer: D.

Swap the position of P_{11} and P_{22} .

Add a minus sign to P_{12} and P_{21} .

Divide it by $|\mathbf{P}| = -2$, from Q.7.

«Inverse matrix of a 2×2 matrix»

Episode 2- Cantonese: 1:44 English: 1:32 Putonghua: 1:32

9. Answer: C.

Refer the video for clearer explanation.

If you choose A or B, please be careful of the sign of term.

«Determinant of 3×3 matrix»

Episode 2- Cantonese: 2:30 English: 2:09 Putonghua: 2:09

10. Answer: B. Please refer the the video for a clearer explanation.

If you choose D, please be careful of the minus sign.

If you choose C, please do not forget the last transverse operation.

«Inverse matrix of 3×3 matrix»

Episode 2- Cantonese: 4:51 English: 3:50 Putonghua: 4:21