

가우스 조던 소거법 예제

(Gauss-Jordan elimination example)

Gauss-Jordan elimination example

▶ Start

▶ End

Gauss-Jordan elimination example

▶ Start

▶ End

$$\begin{cases} x + 2y = 3 \\ 4x + 5y = 6 \end{cases}$$

Gauss-Jordan elimination example

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▶ End

$$\begin{cases} x + 2y = 3 \\ 4x + 5y = 6 \end{cases} \quad \begin{pmatrix} 1 & 2 \\ 4 & 5 \end{pmatrix}$$

Gauss-Jordan elimination example

▶ Start

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$$\begin{cases} x + 2y = 3 \\ 4x + 5y = 6 \end{cases}$$

$$\begin{pmatrix} 1 & 2 \\ 4 & 5 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix} =$$

Gauss-Jordan elimination example

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$$\begin{cases} x + 2y = 3 \\ 4x + 5y = 6 \end{cases}$$

$$\begin{pmatrix} 1 & 2 \\ 4 & 5 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} 3 \\ 6 \end{pmatrix}$$

Gauss-Jordan elimination example

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$$\begin{cases} x + 2y = 3 \\ 4x + 5y = 6 \\ x + 2y = 3 \\ -3y = -6 \end{cases}$$

$$\begin{pmatrix} 1 & 2 \\ 4 & 5 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} 3 \\ 6 \end{pmatrix}$$

Gauss-Jordan elimination example

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$$\begin{cases} x + 2y = 3 \\ 4x + 5y = 6 \\ x + 2y = 3 \\ -3y = -6 \end{cases}$$

$$\begin{pmatrix} 1 & 2 \\ 4 & 5 \\ 1 & 2 \\ 0 & -3 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} 3 \\ 6 \\ 3 \\ -6 \end{pmatrix}$$

Gauss-Jordan elimination example

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$$\begin{cases} x + 2y = 3 \\ 4x + 5y = 6 \end{cases} \quad \begin{cases} x + 2y = 3 \\ -3y = -6 \end{cases}$$

$$\begin{pmatrix} 1 & 2 \\ 4 & 5 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} 3 \\ 6 \end{pmatrix}$$
$$\begin{pmatrix} 1 & 2 \\ 0 & -3 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix} =$$

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$$\begin{cases} x + 2y = 3 \\ 4x + 5y = 6 \end{cases} \quad \begin{cases} x + 2y = 3 \\ -3y = -6 \end{cases} \quad \begin{cases} x + 2y = 3 \\ y = 2 \end{cases}$$

$$\begin{pmatrix} 1 & 2 \\ 4 & 5 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} 3 \\ 6 \end{pmatrix}$$
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$$\begin{cases} x + 2y = 3 \\ 4x + 5y = 6 \end{cases} \quad \begin{cases} x + 2y = 3 \\ -3y = -6 \end{cases} \quad \begin{cases} x + 2y = 3 \\ y = 2 \end{cases}$$

$$\begin{pmatrix} 1 & 2 \\ 4 & 5 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} 3 \\ 6 \end{pmatrix} \quad \begin{pmatrix} 1 & 2 \\ 0 & -3 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} 3 \\ -6 \end{pmatrix} \quad \begin{pmatrix} 1 & 2 \\ 0 & 1 \end{pmatrix}$$

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$$\begin{cases} x + 2y = 3 \\ 4x + 5y = 6 \\ x + 2y = 3 \\ -3y = -6 \\ x + 2y = 3 \\ y = 2 \end{cases}$$

$$\begin{pmatrix} 1 & 2 \\ 4 & 5 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} 3 \\ 6 \end{pmatrix}$$

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$$\begin{pmatrix} 1 & 2 \\ 0 & 1 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix} =$$

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$$\begin{cases} x + 2y = 3 \\ 4x + 5y = 6 \end{cases} \quad \begin{cases} x + 2y = 3 \\ -3y = -6 \end{cases} \quad \begin{cases} x + 2y = 3 \\ y = 2 \end{cases}$$

$$\begin{pmatrix} 1 & 2 \\ 4 & 5 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} 3 \\ 6 \end{pmatrix} \quad \begin{pmatrix} 1 & 2 \\ 0 & -3 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} 3 \\ -6 \end{pmatrix} \quad \begin{pmatrix} 1 & 2 \\ 0 & 1 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} 3 \\ 2 \end{pmatrix}$$

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$$\begin{cases} x + 2y = 3 \\ y = 2 \end{cases}$$

$$\begin{cases} x = -1 \\ y = 2 \end{cases}$$

$$\begin{pmatrix} 1 & 2 \\ 4 & 5 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} 3 \\ 6 \end{pmatrix}$$

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$$\begin{pmatrix} 1 & 2 \\ 0 & 1 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} 3 \\ 2 \end{pmatrix}$$

$$\begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}$$

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$$\begin{cases} x + 2y = 3 \\ 4x + 5y = 6 \\ x + 2y = 3 \\ -3y = -6 \\ x + 2y = 3 \\ y = 2 \\ x = -1 \\ y = 2 \end{cases}$$

$$\begin{pmatrix} 1 & 2 \\ 4 & 5 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} 3 \\ 6 \end{pmatrix}$$

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$$\begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} -1 \\ 2 \end{pmatrix}$$

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$$\begin{pmatrix} 1 & -2 \\ 0 & 1 \end{pmatrix}$$

▶ Start

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$$\begin{pmatrix} 1 & 2 \\ 0 & 1 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} 3 \\ 2 \end{pmatrix}$$

$$\begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} -1 \\ 2 \end{pmatrix}$$

$$\begin{pmatrix} 1 & -2 \\ 0 & 1 \end{pmatrix} \begin{pmatrix} 1 & 0 \\ 0 & -\frac{1}{3} \end{pmatrix}$$

▶ Start

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$$\begin{cases} x + 2y = 3 \\ 4x + 5y = 6 \end{cases}$$

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$$\begin{pmatrix} 1 & 2 \\ 0 & 1 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} 3 \\ 2 \end{pmatrix}$$

$$\begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} -1 \\ 2 \end{pmatrix}$$

$$\begin{pmatrix} 1 & -2 \\ 0 & 1 \end{pmatrix} \begin{pmatrix} 1 & 0 \\ 0 & -\frac{1}{3} \end{pmatrix} \begin{pmatrix} 1 & 0 \\ -4 & 1 \end{pmatrix}$$

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$$\begin{cases} x + 2y = 3 \\ 4x + 5y = 6 \end{cases}$$

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$$\begin{pmatrix} 1 & -2 \\ 0 & 1 \end{pmatrix} \begin{pmatrix} 1 & 0 \\ 0 & -\frac{1}{3} \end{pmatrix} \begin{pmatrix} 1 & 0 \\ -4 & 1 \end{pmatrix} \begin{pmatrix} 1 & 2 \\ 4 & 5 \end{pmatrix} =$$

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$$\begin{pmatrix} 1 & 2 \\ 4 & 5 \end{pmatrix} =$$

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$$\begin{pmatrix} 1 & 2 \\ 4 & 5 \end{pmatrix} = \begin{pmatrix} 1 & 0 \\ 4 & 1 \end{pmatrix}$$

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$$\begin{cases} x + 2y = 3 \\ 4x + 5y = 6 \end{cases} \quad \begin{pmatrix} 1 & 2 \\ 4 & 5 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} 3 \\ 6 \end{pmatrix}$$

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$$\begin{cases} x + 2y = 3 \\ y = 2 \end{cases} \quad \begin{pmatrix} 1 & 2 \\ 0 & 1 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} 3 \\ 2 \end{pmatrix}$$

$$\begin{cases} x = -1 \\ y = 2 \end{cases} \quad \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} -1 \\ 2 \end{pmatrix}$$

$$\begin{pmatrix} 1 & -2 \\ 0 & 1 \end{pmatrix} \begin{pmatrix} 1 & 0 \\ 0 & -\frac{1}{3} \end{pmatrix} \begin{pmatrix} 1 & 0 \\ -4 & 1 \end{pmatrix} \begin{pmatrix} 1 & 2 \\ 4 & 5 \end{pmatrix} = \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}$$

$$\begin{pmatrix} 1 & 2 \\ 4 & 5 \end{pmatrix} = \begin{pmatrix} 1 & 0 \\ 4 & 1 \end{pmatrix} \begin{pmatrix} 1 & 0 \\ 0 & -3 \end{pmatrix}$$

▶ Start

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$$\begin{cases} x + 2y = 3 \\ 4x + 5y = 6 \end{cases} \quad \begin{pmatrix} 1 & 2 \\ 4 & 5 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} 3 \\ 6 \end{pmatrix}$$

$$\begin{cases} x + 2y = 3 \\ -3y = -6 \end{cases} \quad \begin{pmatrix} 1 & 2 \\ 0 & -3 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} 3 \\ -6 \end{pmatrix}$$

$$\begin{cases} x + 2y = 3 \\ y = 2 \end{cases} \quad \begin{pmatrix} 1 & 2 \\ 0 & 1 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} 3 \\ 2 \end{pmatrix}$$

$$\begin{cases} x = -1 \\ y = 2 \end{cases} \quad \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} -1 \\ 2 \end{pmatrix}$$

$$\begin{pmatrix} 1 & -2 \\ 0 & 1 \end{pmatrix} \begin{pmatrix} 1 & 0 \\ 0 & -\frac{1}{3} \end{pmatrix} \begin{pmatrix} 1 & 0 \\ -4 & 1 \end{pmatrix} \begin{pmatrix} 1 & 2 \\ 4 & 5 \end{pmatrix} = \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}$$

$$\begin{pmatrix} 1 & 2 \\ 4 & 5 \end{pmatrix} = \begin{pmatrix} 1 & 0 \\ 4 & 1 \end{pmatrix} \begin{pmatrix} 1 & 0 \\ 0 & -3 \end{pmatrix} \begin{pmatrix} 1 & 2 \\ 0 & 1 \end{pmatrix}$$

Github:

<https://min7014.github.io/math20240606001.html>

Click or paste URL into the URL search bar,
and you can see a picture moving.