Advanced LaTeX / 복합 수식

행렬·적분·편미분을 다루는 연구 노트입니다.

B01. Nested rational expression with a cubic radical

```
R(x)=\frac{\frac{x^2+1}{\sqrt{1+x^4}}-\frac{1}{1+x}}{\sqrt[3]{1+\frac{x^2}{1+x^2}}}
```

$$R\left(x\right)=\frac{\frac{x^{2}+1}{\sqrt{1+x^{4}}}-\frac{1}{1+x}}{\sqrt[3]{1+\frac{x^{2}}{1+x^{2}}}}$$

검토: check every matrix boundary, grouped power and radical.

Original	Editable result
LaTeX input	Separate numerator and denominator roles.

2. Click and edit a variable.

3. 다시 저장한 문서에서도 비교합니다.

B02. Matrix equation with rational and radical coefficients

```
\begin{pmatrix}1&\frac{x}{\sqrt{1+y^2}}&z^2\\\frac{y}{1+x^2}&1&\frac{z}{1+y}\\x_1&y_2&1\
end{pmatrix}\begin{pmatrix}u\\v\\w\end{pmatrix}=\begin{pmatrix}\frac{a}{b}\\\sqrt{c}\\d_1^2\
end{pmatrix}
```

$$\begin{pmatrix}1&\frac{x}{\sqrt{1+y^{2}}}&z^{2}\\\frac{y}{1+x^{2}}&1&\frac{z}{1+y}\\x_{1}&y_{2}&1\end{pmatrix}\begin{pmatrix}u\\v\\w\end{pmatrix}=\begin{pmatrix}\frac{a}{b}\\\sqrt{c}\\d_{1}^{2}\end{pmatrix}$$

검토: check every matrix boundary, grouped power and radical.

Original	Editable result
LaTeX input	Separate numerator and denominator roles.

2. Click and edit a variable.

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B03. Piecewise rational function with an exponential tail

```
p(x)=\begin{cases}\frac{x^2}{1+x^2}&x\leq0\\\frac{e^{-x}}{\sqrt{1+x^2}}&x>0\end{cases}
```

$$p(x)=\begin{cases}\frac{x^2}{1+x^2} & x\leq 0\\ \frac{e^{-x}}{\sqrt{1+x^2}} & x>0\end{cases}$$

검토: check every matrix boundary, grouped power and radical.

Original	Editable result
LaTeX input	Separate numerator and denominator roles.

2. Click and edit a variable.

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B04. Block normal equations for constrained least squares

```
\begin{pmatrix}A^{T}A+\lambda I&C^{T}\\C&0\end{pmatrix}\begin{pmatrix}x\\\mu\end{pmatrix}=\
begin{pmatrix}A^{T}b\\d\end{pmatrix}
```

$$\begin{pmatrix}A^{T}A+\lambda I & C^{T}\\ C & 0\end{pmatrix}\begin{pmatrix}x\\ \mu\end{pmatrix}=\begin{pmatrix}A^{T}b\\ d\end{pmatrix}$$

검토: check every matrix boundary, grouped power and radical.

Original	Editable result
LaTeX input	Separate numerator and denominator roles.

2. Click and edit a variable.

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B05. Double sum with a normalized pairwise distance

```
\sum_{i=1}^{n}\sum_{j=1}^{m}\frac{(x_i-y_j)^2}{\sqrt{1+x_i^2+y_j^2}}
```

$$\sum_{i=1}^{n}\sum_{j=1}^{m}\frac{\left(x_i-y_j\right)^2}{\sqrt{1+x_i^2+y_j^2}}$$

검토: check every matrix boundary, grouped power and radical.

Original	Editable result
LaTeX input	Separate numerator and denominator roles.

2. Click and edit a variable.

3. 다시 저장한 문서에서도 비교합니다.

B06. Integral with nested rational and cubic radicals

```
\int_0^1\frac{\sqrt{1+\frac{x^2}{1-x^2}}}{1+\sqrt[3]{1+x^3}}\,dx
```

$$\int_0^1\frac{\sqrt{1+\frac{x^2}{1-x^2}}}{1+\sqrt[3]{1+x^3}}\,dx$$

검토: check every matrix boundary, grouped power and radical.

Original	Editable result
LaTeX input	Separate numerator and denominator roles.

2. Click and edit a variable.

3. 다시 저장한 문서에서도 비교합니다.

B07. Mixed partial derivative with a grouped derivative argument

```
\frac{\partial}{\partial x}\left(\frac{\partial f}{\partial y}\right)=\frac{\partial^2f}{\partial x\partial y}
```

$$\frac{\partial}{\partial x}\left(\frac{\partial f}{\partial y}\right)=\frac{\partial^2 f}{\partial x\,\partial y}$$

검토: check every matrix boundary, grouped power and radical.

Original	Editable result
LaTeX input	Separate numerator and denominator roles.

2. Click and edit a variable.

3. 다시 저장한 문서에서도 비교합니다.

B08. Factored rational polynomial with a matrix determinant

```
\frac{(x^2+1)^3}{(1+x)^2}\begin{vmatrix}a&\frac{b}{1+c}\\\frac{b}{1+c}&d^2\end{vmatrix}
```

$$\frac{(x^2+1)^3}{(1+x)^2}\begin{vmatrix}a&\frac{b}{1+c}\\\frac{b}{1+c}&d^2\end{vmatrix}$$

검토: check every matrix boundary, grouped power and radical.

Original	Editable result
LaTeX input	Separate numerator and denominator roles.

2. Click and edit a variable.

3. 다시 저장한 문서에서도 비교합니다.