수학에서 의사소통과 LaTeX

DG Conference, Jeju Univ.

김영욱

고려대학교

(Jan 2010)

차 례

MIT 강의 교재 목차 (1)

MIT 강의 교재 목차 (2)

차 례

의사소통 방법

의사소통 도구

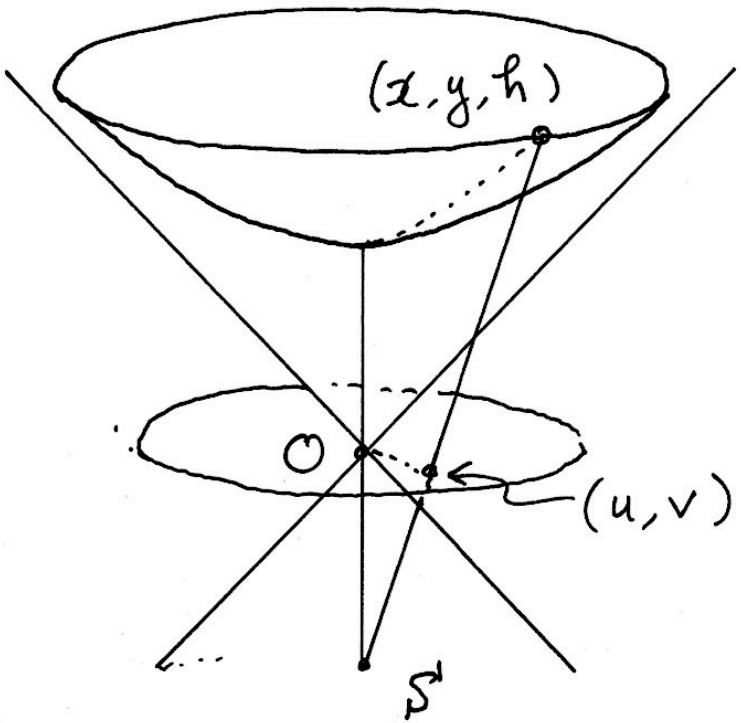
1. Conversation
2. Chatting, 화상 chatting
3. Mail, e-Mail
4. Presentation
5. Articles (and Books)

의사소통 방법

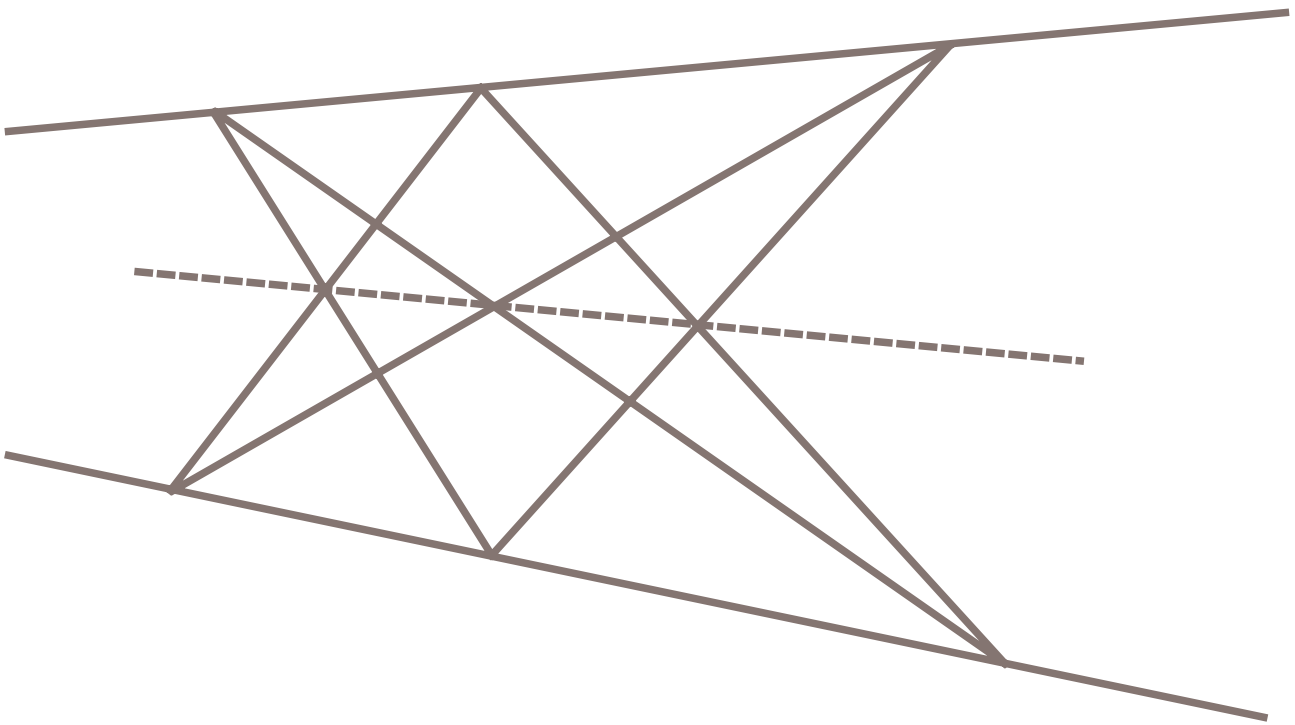
Article 등을 만드는 도구

1. 손과 연필
2. Scanner
3. Drawing programs
4. Mathematica, Maple, Matlab, etc.
5. Word Processor
6. LaTeX

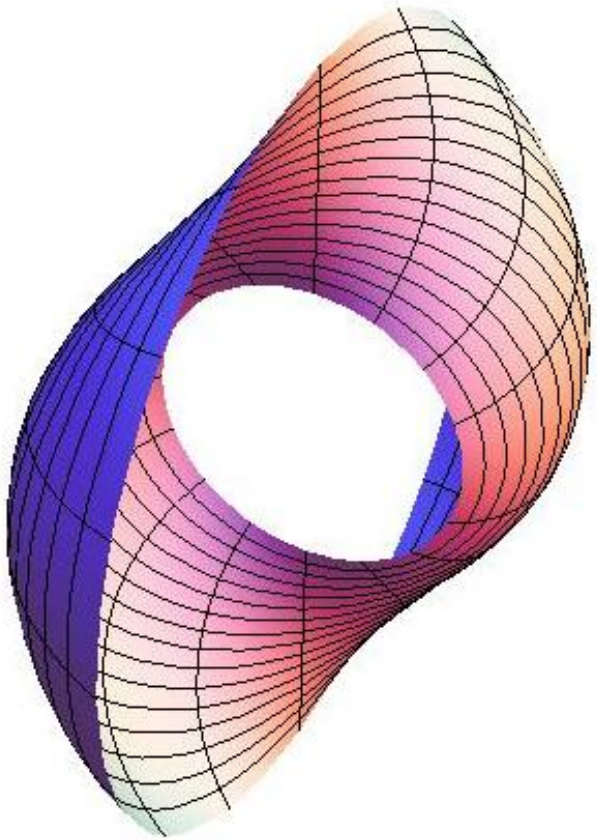
Pen과 Scanner



Drawing program



Mathematica etc.



Word Processor

Theorem 4.1.1. *The set of constructible points in 3-dimensional construction is equivalent to constructible points in 2-dimensional construction. In other words, the set of constructible points is quadratic extensions of <**Q**, +, *> (for numbers obtained by +, -, *, and / to given unit length 1).*

Proof:

First, the general equation for sphere is

$(x-a)^2 + (y-b)^2 + (z-c)^2 = r^2$

and the general equation for plane:

$ax + by + cz = d$

Note that both equations still contain only squares with + and •

LaTeX

Theorem 3.1. (i) *The conjugate minimal surface of the parabolic helicoid PH is the hyperbolic catenoid HC_1. Moreover, PH and HC_1 are isometric.*

(ii) *The conjugate minimal surface of the hyperbolic helicoid HH_α is the hyperbolic catenoid HC_β if $\beta^2 = 1 + \alpha^2$.*

[Proof] (i) Prof. Shin. (i) For $f(u) = \log(\sinh u)$ and $r(u) = \log(e^u + 1) - \log(e^u - 1)$, we have

$$f'(u)^2 = 1 + r'(u)^2 = \frac{1}{\sinh^2 u},$$

which implies that PH is isometric to HC_1.

Moreover, $S_{PH} = JS_{HC_1}$, $T_{PH} = JT_{HC_1}$ and $\nu_{PH} = \nu_{HC_1}$.

(ii) We may assume that f and r satisfy the initial condition

$$\begin{cases} \alpha \sinh f(0) = \beta \sinh r(0), \\ \alpha f'(0) \cosh f(0) = \beta r'(0) \cosh r(0). \end{cases} \tag{4}$$

차 례

LaTeX

김영호	14:00∼14:30	Riemannian geometry and its related fields
조종택	14:30∼15:00	공간과 차원
신해용	15:30∼15:50	Minimal Surfaces in $H^2 \times R$ and Conjugate Surfaces of Helicoids
정승달	15:50∼16:10	Transverse geometry of a foliation
정민주	16:10∼16:30	Transversal harmonic maps and related topics
김영욱	17:00∼17:30	수학에서 Communication과 LaTeX
김향숙	17:30∼18:00	기하학의 발전에서 여성의 역할

LaTeX 사용

```
$ G_{-1}(x,y)=x^{n-1}+x^n-1 $
```

$$G_{-1}(x,y) = x^{n-1} + x^n - 1$$

```
$ 1 + 2 + \cdots + n = \frac{n(n+1)}{2} $
```

$$1 + 2 + \cdots + n = \frac{n(n+1)}{2}$$

```
\[ w=\left[
    \begin{array}{ccc}
      w_{0,0} & \cdots & w_{0,n-1} \\
      \vdots & \ddots & \vdots \\
      w_{n-1,0} & \cdots & w_{n-1,n-1}
    \end{array}
    \right] \]
```

$$w = \left[\begin{array}{ccc} w_{0,0} & \cdots & w_{0,n-1} \\ \vdots & \ddots & \vdots \\ w_{n-1,0} & \cdots & w_{n-1,n-1} \end{array} \right]$$

```
\[
D(x,A^k)={\rm min} \left\{
   \begin{array}{ll}
       f_i(x^k)-f_i(x), &i=1,\cdots ,p \\
       -g_j(x),         &j=1,\cdots ,m
   \end{array} \right\} \]
```

$$D(x, A^k) = \min \left\{ \begin{array}{ll} f_i(x^k) - f_i(x), & i = 1, \cdots, p \\ -g_j(x), & j = 1, \cdots, m \end{array} \right\}$$

차 례

사용된 것

- LaTeX+ Beamer
- koTeX2009
- 나눔명조체 + 나눔고딕체
- Minion Pro + Myriad Pro
- MacBook Air
- 삼성 복합기 (scanner)
- http://www.ktug.or.kr/xe/