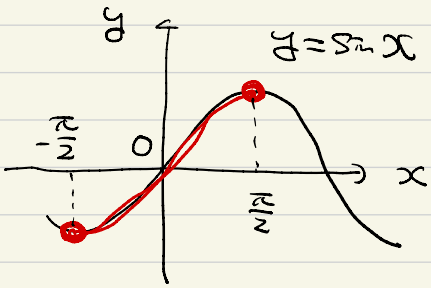
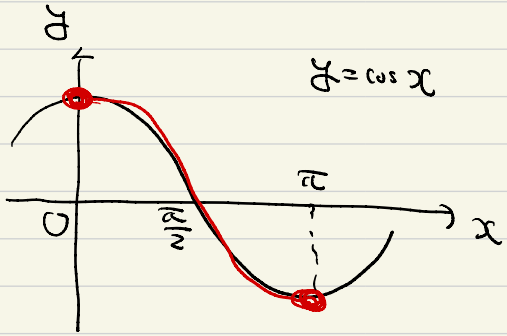
2022/05/13





$\cos : [0,\pi] \longrightarrow [-1,1]$

全単射 である

Prop 1.4.33 $\quad \chi : \mathcal{P}(X) \longrightarrow \mathcal{Y}(X,\{0,1\})$

$A \longmapsto \chi_A$

(:) 示す.

[示すこと: $\forall f \in \mathcal{Y}(X,\{0,1\}), \exists A \in \mathcal{P}(X) :$

$f = \chi_A$]

$\forall f \in \mathcal{Y}(X,\{0,1\})$ をとる.

すると $f : X \longrightarrow \{0,1\}$: map

[示すこと: $\exists A \in \mathcal{P}(X) : \quad f = \chi_A$]

$A := \{ x \in X \mid f(x) = 1 \}$ 라고 하면 $A \in \mathcal{P}(X)$

[주장: $f = \chi_A$

i.e., $\forall x \in X, \quad f(x) = \chi_A(x)$]

$\forall x \in X$ 에 대해

[주장: $f(x) = \chi_A(x)$]

$x \in X$ 일 때 $x \in A$ 또는 $x \in X - A$.

$x \in A$ 이면, $f(x) = 1 = \chi_A(x)$

$x \in X - A$ 이면, $f(x) = 0 = \chi_A(x)$ //

<u>단사 증명</u>

[주장: $\forall A, A' \in \mathcal{P}(X) \ (\chi_A = \chi_{A'}), \ A = A'$]

$\forall A, A' \in \mathcal{P}(X) \ (\chi_A = \chi_{A'})$ 에 대해

[주장: $A = A'$]

$x \in A \iff \chi_A(x) = 1$

$\iff \chi_{A'}(x) = 1 \iff x \in A'$ //