CV 1/4.D

MA CV 8/10/14 1

$$A \setminus (B \setminus C) = (A \setminus B) \cup (A \cap C)$$

$x \in A \setminus (B \setminus C) \Leftrightarrow x \in A \wedge x \in (B \setminus C) \Leftrightarrow$

$x \in A \wedge \neg (x \in B \wedge x \notin C) \Leftrightarrow x \in A \wedge (x \notin B \vee x \in C) \Leftrightarrow$

$\Leftrightarrow (x \in A \wedge x \notin B) \vee (x \in A \wedge x \in C)$

CV 1/5A

$f: X \to Y$

$g: Y \to Z$

$h = f \circ g \quad h(x) = g(f(x))$

DŮKAZ SPOREM

$\exists x_1, x_2 : x_1 \neq x_2 : h(x_1) = h(x_2)$

$g(f(x_1)) = g(f(x_2))$

$f(x_1) = f(x_2)$

$x_1 = x_2$

CV 1/5B

$\exists z \in Z ; \nexists x : h(x) = z$

$\left.\begin{array}{l} \exists y \in Y ; g(y) = z \\ \exists x \in X ; f(x) = y \end{array}\right\} \exists x \in X : h(x) = g(f(x)) = z$

$f(A) = \{f(x) ; x \in A\}$

CV 1/6A

$f: X \to Y ; A, B \subset X$

$f(A) \cup f(B) = f(A \cup B)$

$f(A) = \{ \cancel{f(A)} ; f(a) ; a \in A\}$

$f(B) = \{f(b) ; b \in B\}$

$\} \{f(x) ; x \in A \vee x \in B\}$

$f(A \cup B) = \{f(y) ; y \in A \vee y \in B\}$

$x, y \in A \vee x, y \in B$

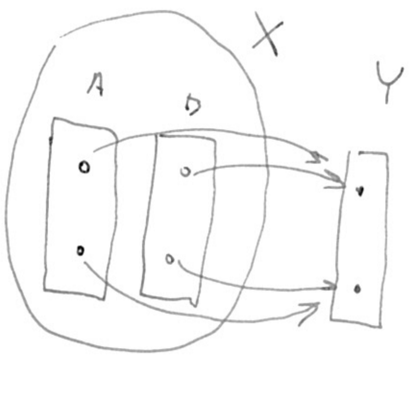
6.D)

$f(A \cap B) = f(A) \cap f(B)$

$f(A) = \{f(a) ; a \in A\}$

$f(B) = \{f(b) ; b \in B\}$

$f(A \cap B) = \{f(x) ; x \in A \wedge x \in B\}$



$\exists f(x) : x \in A \wedge x \notin B \vee x \notin A \wedge x \ldots$

$A \subset \mathbb{N}: A = \mathbb{N} \Leftrightarrow (1 \in A) \wedge (\forall k \in A: k+1 \in A)$

CV2 1a)

PRO $\forall n \in \mathbb{N}$: $2^n > n$ A $3^n > n^2$

① $n=1$

$2^1 > 1$

$2 > 1$

② $2^{n+1} > n+1$

$2 \cdot 2^n \cdot > n+1$

$2^n > \frac{n+1}{2}$

$n \geq \frac{n+1}{2}$

$2n \geq n+1$

$n \geq 1$

$3^n > n^2$

① $3^1 = 1$

② $n \to n+1$

$3^{n+1} > (n+1)^2$

$3 \cdot 3^n > n^2 + 2n + 1$

$3^n + 3^n + 3^n > n^2 + 2n + 1$

$3^n > 1$

$3 > 2$

$\vdots$

MA cv 8/10/14 (4)

$$\frac{1}{2}\cdot\frac{3}{4}\cdot\ldots\cdot\frac{2n-1}{2n} < \frac{1}{\sqrt{2n+1}}$$

(1)

$$\frac{(2\cdot 1)-1}{2} < \frac{1}{\sqrt{2+1}}$$

$$\frac{1}{2} < \frac{1}{\sqrt{3}}$$

(2)

$$\prod_{k=1}^{n} \frac{2(n+1)-1}{2(n+1)} < \frac{1}{\sqrt{2(n+1)+1}}$$

$$\prod_{k=1}^{n} \frac{2k-1}{2k} \cdot \frac{2(n+1)-1}{2(n+1)} < \frac{1}{\sqrt{2n+3}}$$

$$\prod_{k=1}^{n} \frac{2k-1}{2k} \cdot \frac{2(n+1)-1}{2(n+1)} < \frac{1}{\sqrt{2n+1}} \cdot \frac{2(n+1)-1}{2(n+1)} \leq \frac{1}{\sqrt{n+3}}$$

$$\frac{1}{\sqrt{2n+1}} \cdot \frac{2(n+1)-1}{2(n+1)} \leq \frac{1}{\sqrt{2n+3}} \quad /\,{}^2$$

$$\frac{1}{2n+1} \cdot \frac{(2n+1)^2}{2^2(n+1)^2} \leq \frac{1}{2n+3}$$

$$\frac{2n+1}{\cancel{2}}$$

$\vdots$

$$3 \leq 4$$