Analisi Matematica 1 - 23 Settembre 2024 - docente: Callegari

Lezione 1: Prime nozioni sugli insiemi

$\boxed{\text{DEF.1}}$ L'INSIEME A È VUOTO SE NON GLI APPARTIENE ALCUN ELEMENTO.

$\boxed{\text{DEF.2}}$ DATI 2 INSIEMI A, B DIREMO CHE

$A \subset B$ SE ogni elemento di A È ANCHE ELEMENTO DI B.

$A = B$ SE $A \subset B$ E $B \subset A$

$$A = \{1, 3, 7\}.$$

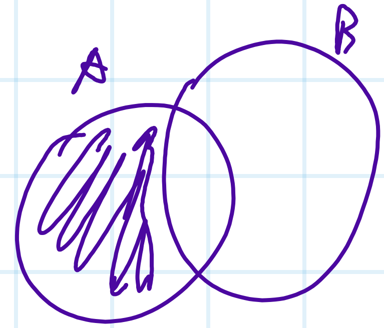
$$B = \{x \in \mathbb{Z} \mid 2 \text{ divide } x\}$$

$$A = \left\{1, \frac{1}{2}, \frac{1}{3}, \frac{1}{4}, \dots, \frac{1}{n}, \dots\dots\right\}$$

$$A = \left\{\frac{1}{n} \;\middle|\; n \in \mathbb{N} - \{0\}\right\}$$

$$A = \{ f(n) \mid n \in B \}$$

$\boxed{\text{DEF.}}$ DATI 2 INSIEMI $A, B \subset U$ DEFINIAMO

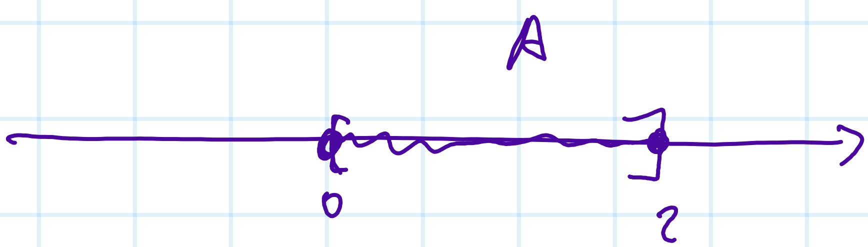


$$A \cup B = \{ \overbrace{x \in U} \mid x \in A \text{ o } x \in B \}$$

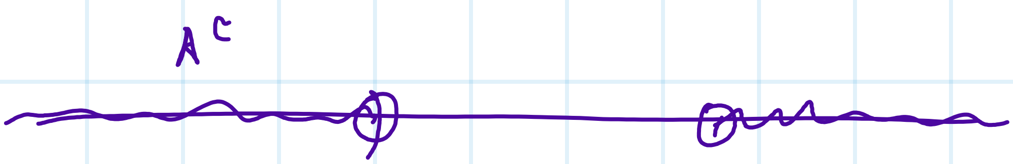
$$A \cap B = \{ x \in U \mid x \in A \text{ e } x \in B \}$$

$$\to \quad A - B = \{ x \in U \mid x \in A \text{ MA } x \notin B \}$$

$$A \times B = \{ (x, y) \mid x \in A \text{ e } y \in B \}$$



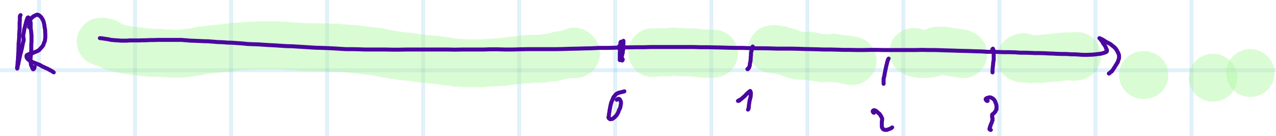
$$A^c = (-\infty, 0) \cup (2, +\infty)$$



DEF. DATO $A \subset U$ DEFINIAMO $A^c = U - A$

$\mathbb{N}$

$\mathbb{N}^c$



$U = \mathbb{R}$ $\qquad \mathbb{N}^c = (-\infty, 0) \cup (0,1) \cup (1,2) \cup \dots \cup (n, n+1) \cup \dots$

$U = \mathbb{Z}$ $\qquad N^c = \{-1, -2, -3, \dots, -n, \dots\}$

$\boxed{T.1}$ (DISTRIBUTIVITÀ)

DATI $A, B, C \subset U$

ALLORA

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

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