Deduction

André has a black suit and a tweed suit. He always wears his tweed suit OR he wears sandals. If he wears his tweed suit and purple shirt, he does not wear a bow tie. He never wears his tweed suit unless he also wears a purple shirt OR sandals. If he wears sandals, he also wears a purple shirt. Yesterday, André wore a bow tie. What else did he wear?

W=Tweed suit
S=Sandals
P=Purple Shirt
B=Bowtie

OR=logical or
Solve using truth table and reasoning

Deduction

W=tweed suit

S=Sandals

P=Purple Shirt

B=Bowtie

$$W \vee S$$

$$(W \wedge P) \rightarrow \neg B$$

$$W \rightarrow (P \vee S)$$

$$S \rightarrow P$$

$$B$$

Set-Builder Notation

- $\{-3,-2,-1,0,1,2,3\}$
- The set of numbers that are divisible by 7 or 3.
- The set of odd integers
- The set of powers of two up to 100.

Set-Builder Notation

- $\{-3,-2,-1,0,1,2,3\}$
  - $\{x\colon x \in \mathbb{Z} \land |x| \leq 3\}$
- The set of numbers that are divisible by 7 or 3.
  - $\left\{x\colon \left(\frac{x}{7} \in \mathbb{Z}\right) \lor \left(\frac{x}{3} \in \mathbb{Z}\right)\right\}$

Set-Builder Notation

- The set of positive odd integers
  - $\{2x + 1 : x \in \mathbb{N}\}$
- The set of powers of two up to 100.
  - $\{2^x : (x \in \mathbb{N}) \wedge (2^x \leq 100)\}$