$\exists x\,(P(x) \to \sim Q(x))$

$\equiv \sim \forall x\,(P(x) \wedge Q(x))$

$a \to b \equiv \sim a \vee b$

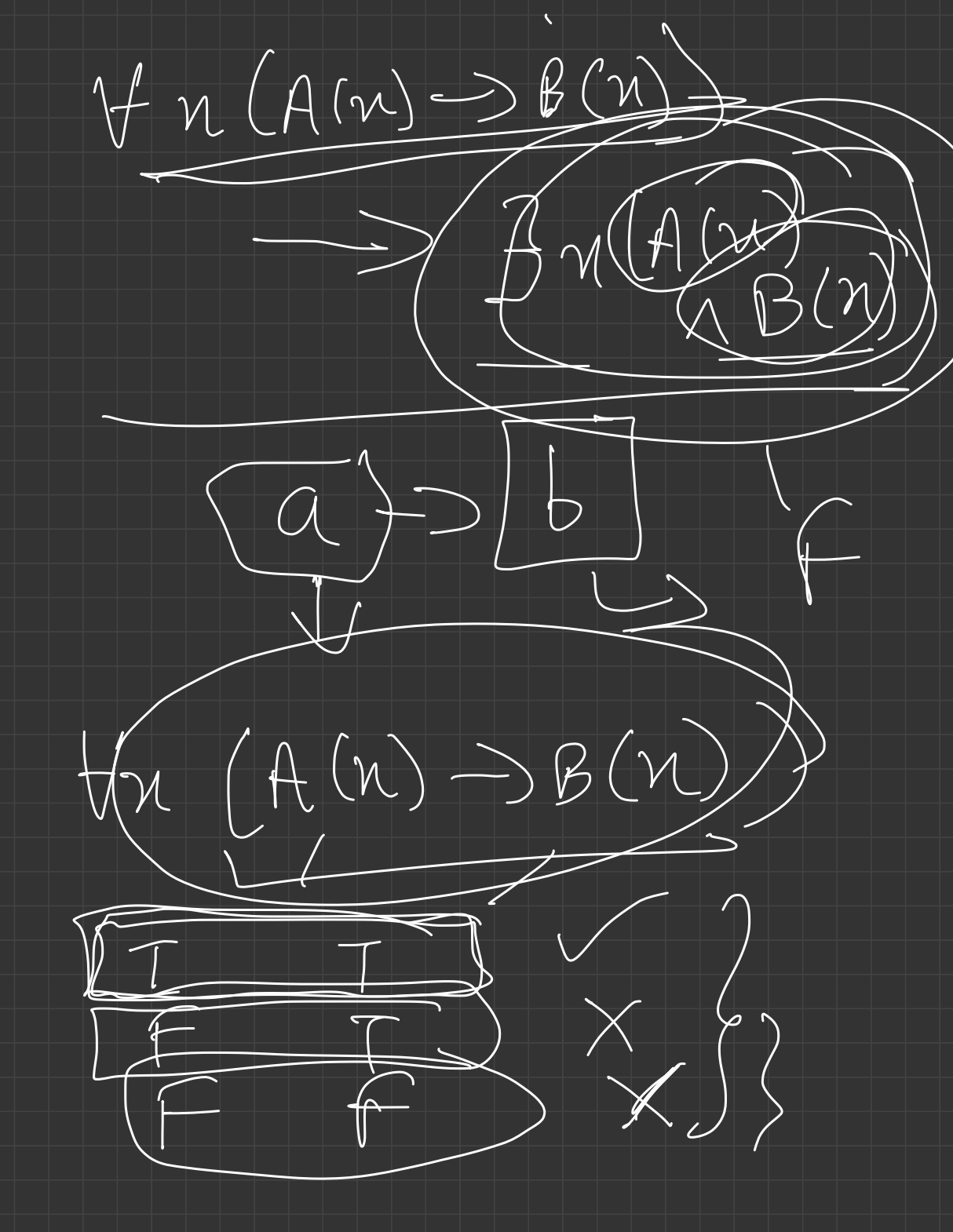
$\sim(\exists x\,(\sim P(x) \vee \sim Q(x)))$ +1

$\sim(\forall x\ P(x) \wedge Q(x))$ +2

- $\exists x\,P(x) \wedge \exists x \sim P(x)$

$\equiv \exists x(P(x) \wedge \sim P(x))$

even $\wedge$ odd

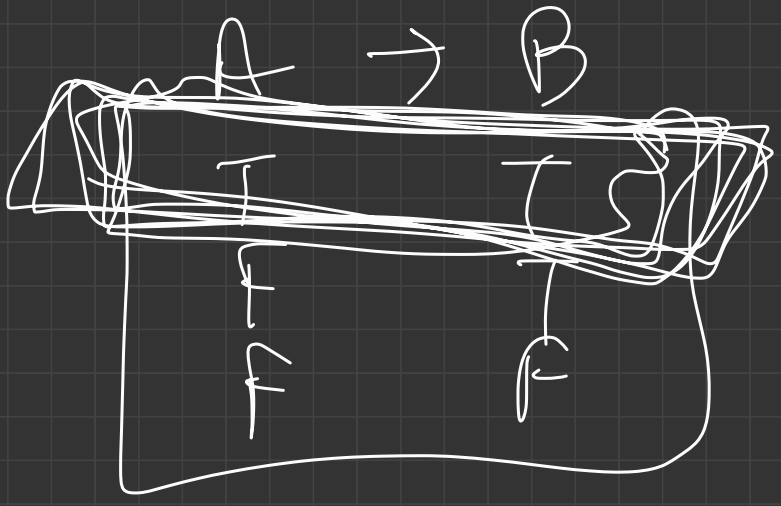

∀n (A(n) → B(n))
∃n (A(n) ∧ B(n))
a → b
F
∀n (A(n) → B(n))
T T
F T
F F
X
X

$\forall x\,(A(x) \to B(x))$

$\to \exists x\,(A(x) \wedge B(x))$

$\forall x\,(A(x) \to B(x)) \Rightarrow$ ✓

$A(x)$ ✓



(d) $\exists x A(x) \wedge \exists x \sim A(x)$

$\equiv \exists x \exists y (A(x) \wedge \sim A(y))$

(b) $\exists x (A(x) \Rightarrow B(x))$

$\equiv \sim \forall x (A(x) \wedge B(x))$

$\exists x (\sim A(x) \vee B(x))$

① $\forall x (A(x) \wedge \sim B(x))$

② $\sim \forall x (A(x) \wedge \sim B(x))$

False

$\forall n \; A(n) \to B(n)$

$\exists n \; (A(n) \wedge B(n))$

$\forall n \; A(n) \to B(n)$

$\exists x A(x) \wedge \exists x \neg A(x)$

$A(x) \rightarrow even$

$\neg A(x) \rightarrow odd$

$x \in N$ $\quad$ $x \in N$

$x \in even \wedge x \in odd$ ✓

$\exists x (A(x) \wedge \neg A(x))$

$x \in even \wedge odd$ ✗

A	B	A ⇒ B
T	T	T
F	T	T ✓
F	F	T ✓

$A(x)$ - Точи
$A(x)$ - False $\Rightarrow$ } T

T A:

$\exists (A(x) \leftrightarrow B(x)) \wedge \forall B(x)$

$\exists ((A \to B) \wedge (B \to A)) \wedge \forall B(x)$

$\exists ((\neg A \vee B) \wedge (\neg B \vee A))$

$\exists ((\neg A \vee B) \wedge \neg B) \vee (\neg A \vee B) \wedge A))$

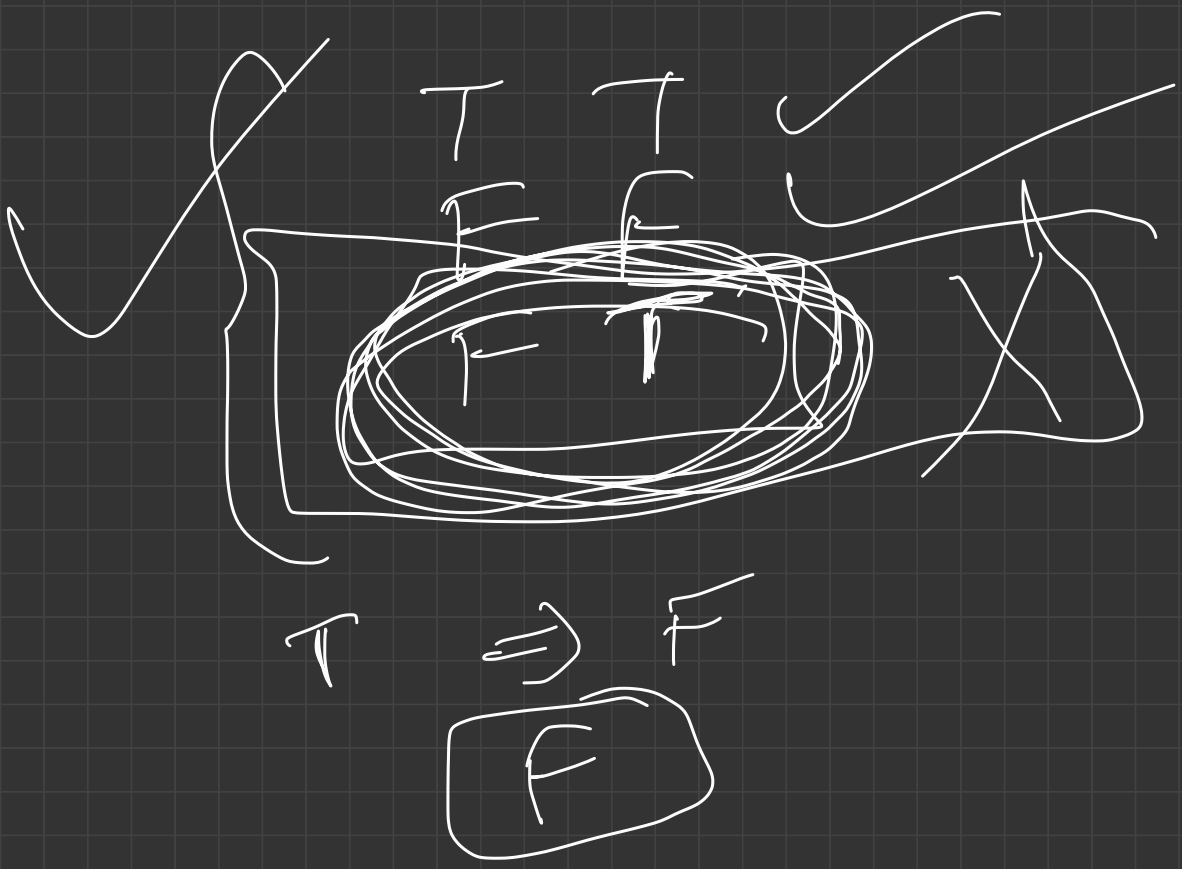
$\exists ((\neg A \wedge \neg B) \vee (A \wedge B))$

$\forall \neg (\neg A \wedge \neg B) \wedge \neg (A \wedge B) \wedge \forall B(x)$

$\forall (A \vee B) \wedge (\neg A \vee \neg B)) \equiv A$

$\forall A(x) \wedge \forall B(x)$

$$(A \vee B) \wedge (\neg A \vee \neg B) \wedge \neg B$$



$R \Rightarrow z^2$

xRy

$3 \mid x^2 - y^2$

Equivalent

xRy

$3 \mid x^2$

xRy

$3 \mid x^2 - 1$

$[1] =$

$x \in z$

$x = Pq + \alpha$

$[\ x = 3q + \alpha$

$3 \mid x^2 - y^2$

$[0]$,

$R = \{(x_1, y_1), (x_2, y_2) : R^2 \times R^2$

$x_1^2 + y_1^2 = x_2^2 + y_2^2\}$

xRo

$a, b \in R^2$

$x^2 + y^2 = a^2 + b^2$

$Y \subset B$, $f^{-1}(Y) = \{a \in A \mid f(a) \in Y\}$

$f(x) = \{f(a) \in B \mid a \in X\}$

$x \in (A \cup B)$ & $x \notin C$

$x \in A$ or $x \in B$ & $x \notin C$

(a)

$$2 \geq 2$$

$$\geq \sqrt{3n+1} + \frac{2n+2}{2n+1}$$

$$\sqrt{3n+1} + 1 + \frac{1}{2n+1}$$

$P(A)$

$R = \{(x,y) : x, y \in X, +\in P(A)\}$

R

$$n^3 - n - 1 = 0$$

n be rational

$$\frac{a^3}{b^3} - \frac{a}{b} - 1 = 0$$

$$a^3 - ab^2 - b^3 = 0$$

$\bigcup_{x \in \mathbb{R}} x := \mathbb{R}_0$

$\frac{e^n}{\sqrt{e^{n-1}}} < \varepsilon$

$\frac{1}{ne^n} < \varepsilon$

$\frac{1}{n} < \frac{1}{N} < \varepsilon$

$\frac{1}{n} < \frac{1}{N}$

$n > N$

$\frac{1}{n} < \frac{1}{N}$

$\frac{1}{e^n} < \frac{1}{e^N}$

$\frac{1}{ne^n} < \frac{1}{N} < \varepsilon$

$e^n < e^N$

$\frac{e^n}{\sqrt{e^{n-1}}}$

$ab \equiv a \bmod n \Rightarrow a \equiv 0 \bmod n$ or $b \equiv 1 \bmod n$

$d = an$
$d = bm$

$\Leftarrow$, $an + bm = 2d$

$d \mid an + bm$

$d \mid \gcd(a, b)$