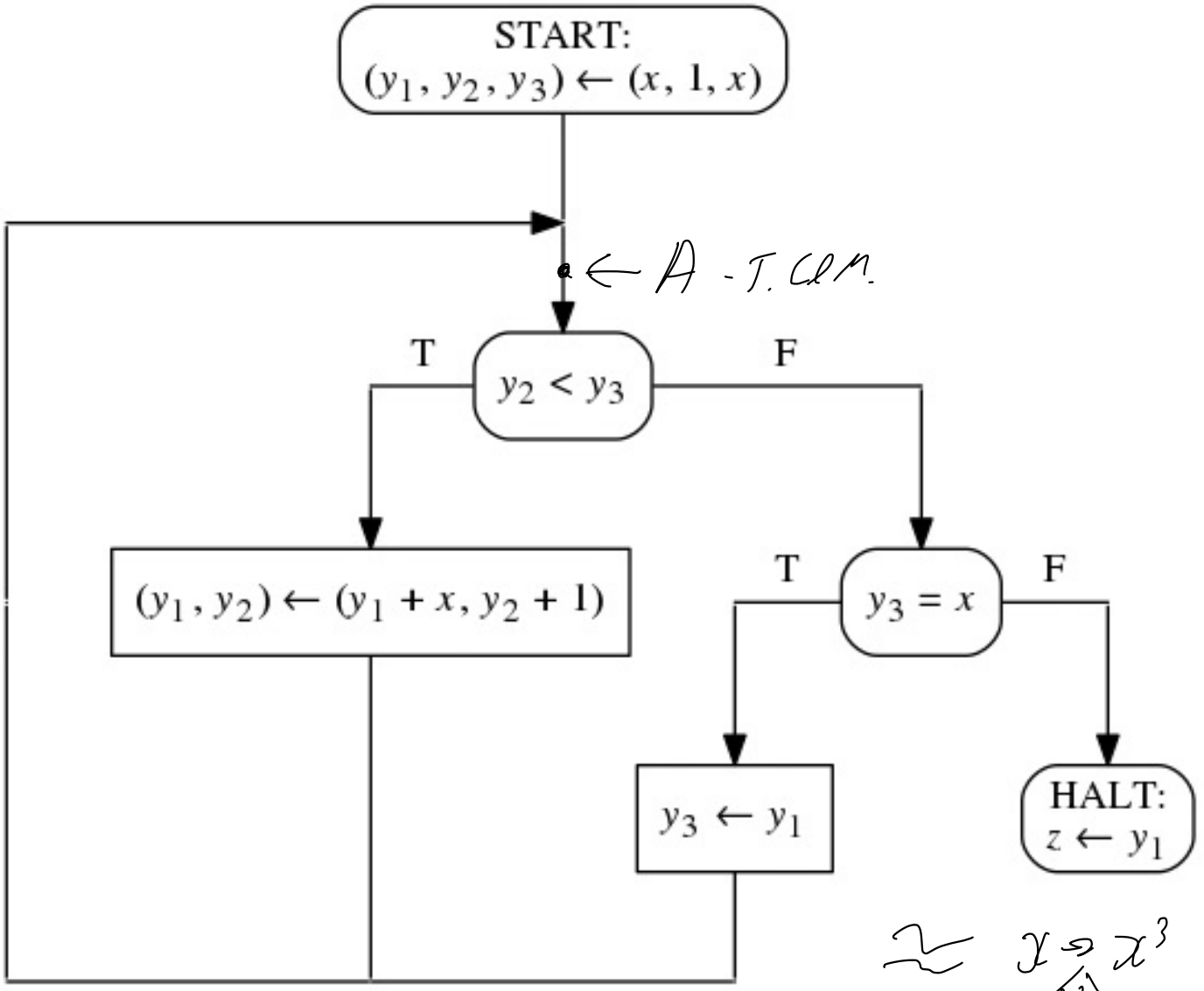
Задание 1.3

$V = \{ x, y_1, y_2, y_3, z \}$

$\phi(x) \equiv x > 1$

$D_x = D_{y_1} = D_{y_2} = D_z = \mathbb{Z}$



$x \Rightarrow x^3$

$x \cdot x +$ остаток

$S \to A: \; x > 1 \Rightarrow P_A(x, x, 1, x)$

$A \xrightarrow{T} A: \; x > 1 \wedge P_A(a, y_1, y_2, y_3) \wedge [y_2 < y_3] \to$

$\to P_A^{зам}[x, y_1 + x, y_2 + 1, y_3)$

$A \xrightarrow{T} A_{сущ}: \; x > 1 \wedge P_A(x, y_1, y_2, y_3) \to u_A[x, y_1, y_2, y_3) \in \omega$

$A \xrightarrow{FT} A: \; (x > 1) \wedge P_{A^*}[x, y_1, y_2, y_3) \wedge \underbrace{y_2 \geq y_3 \wedge y_3 \neq x}_{y_2 = y_3} \Rightarrow$

$\rightarrow u_A[x, y_1, y_2, y_1) < u_A(x, y_1, y_2, y_3)$

$A \xrightarrow{FT} A_{сум}: x > 1 \wedge P_A[x, y_1 y_2, y_3) \rightarrow$

$u_A(x, y_1, y_2, y_3) \in W$

$W = \{|N, >\}$

$P_A: (y_1 = y_2 \cdot x) \wedge ((((y_3 = x) \wedge (y_2 \leq x)) \vee (y_3 = x^2 \wedge x \leq y_2 \leq x^2))$

$\exists u_A = (2x^2 - y_2 - y_3) \geq 0$

$A \xrightarrow{T} A_{зав}: x > 1 \wedge (y_1 = y_2 \cdot x) \wedge ((y_3 = x \wedge y_2 \leq x) \vee$

$\vee (y_3 = x^2 \wedge x \leq y_2 \leq x^2) \rightarrow 2x^2 - (y_2 + 1) - y_3 <$

$< 2x^2 - y_2 - y_3$

$A \xrightarrow{FT} A_{зав}: x > 1 \wedge P_A \wedge y_2 \geq y_3 \wedge y_3 = x \rightarrow$

$\rightarrow 2\cancel{x^2} - \cancel{y_2} - y_2 x \underset{||}{<} \cancel{2x^2} - \cancel{y_2} - y_3$ $(x > 1)$

$y_3 < y_2 x \Rightarrow \cancel{x} < y_2 \cancel{x} \Rightarrow y_2 > 1$

$A \xrightarrow{T} A_{сум}: (x > 1) \wedge (y_1 = y_2 \cdot x) \wedge (((y_3 = x) \wedge (y_2 \leq x)$

$) \wedge ((y_3 = x) \wedge (x \leq y_2 \leq x^2))) \rightarrow 2x^2 - y_2 - y_3 \in W$ ✓

$A \xrightarrow{FT} A_{сум}$. $(x > 1) \wedge (y_1 = y_2 \cdot x) \wedge (((y_3 = x) \wedge (y_2 \leq x)) \wedge ((y_3 = x) \wedge (x \leq y_2 \leq x^2))) \rightarrow 2x^2 - y_2 \cdot y_3 \in W$ ✓

$A \xrightarrow{FT} A_{зав}$: $\Leftrightarrow (x > 1) \wedge (y_1 = y_2 \cdot x) \wedge (((y_3 = x) \wedge (y_2 \leq x)) \vee (y_3 = x \wedge x \leq y_2 \leq x^2)) \rightarrow 2x^2 - y_2 - y_1 < 2x^2 - 2y_2 - y_3$ ✓

$A \xrightarrow{T} A_{зав}$: $\Leftrightarrow (x > 1) \wedge (y_1 = x_2 \cdot x) \wedge (((y_3 = x) \wedge (y_2 \leq x)) \vee (y_3 = x \wedge x \leq y_2 \leq x^2)) \wedge (y_2 < y_3) \rightarrow$

$\rightarrow 2x^2 - (y_2 + 1) - y_3 < 2x^2 - y_2 - y_3$ ✓