Kirill Zuev

Home assignment № 3

Task 2.

The minimal subset of implications from which all of given are deducible is:

$$\{A \to C,\ C \to E,\ E \to B,\ E \to D,\ DB \to C\}$$

For getting $C \to D$ use 3-rd axiom: $\{C \to E,\ E \to D\} \Rightarrow C \to D$.

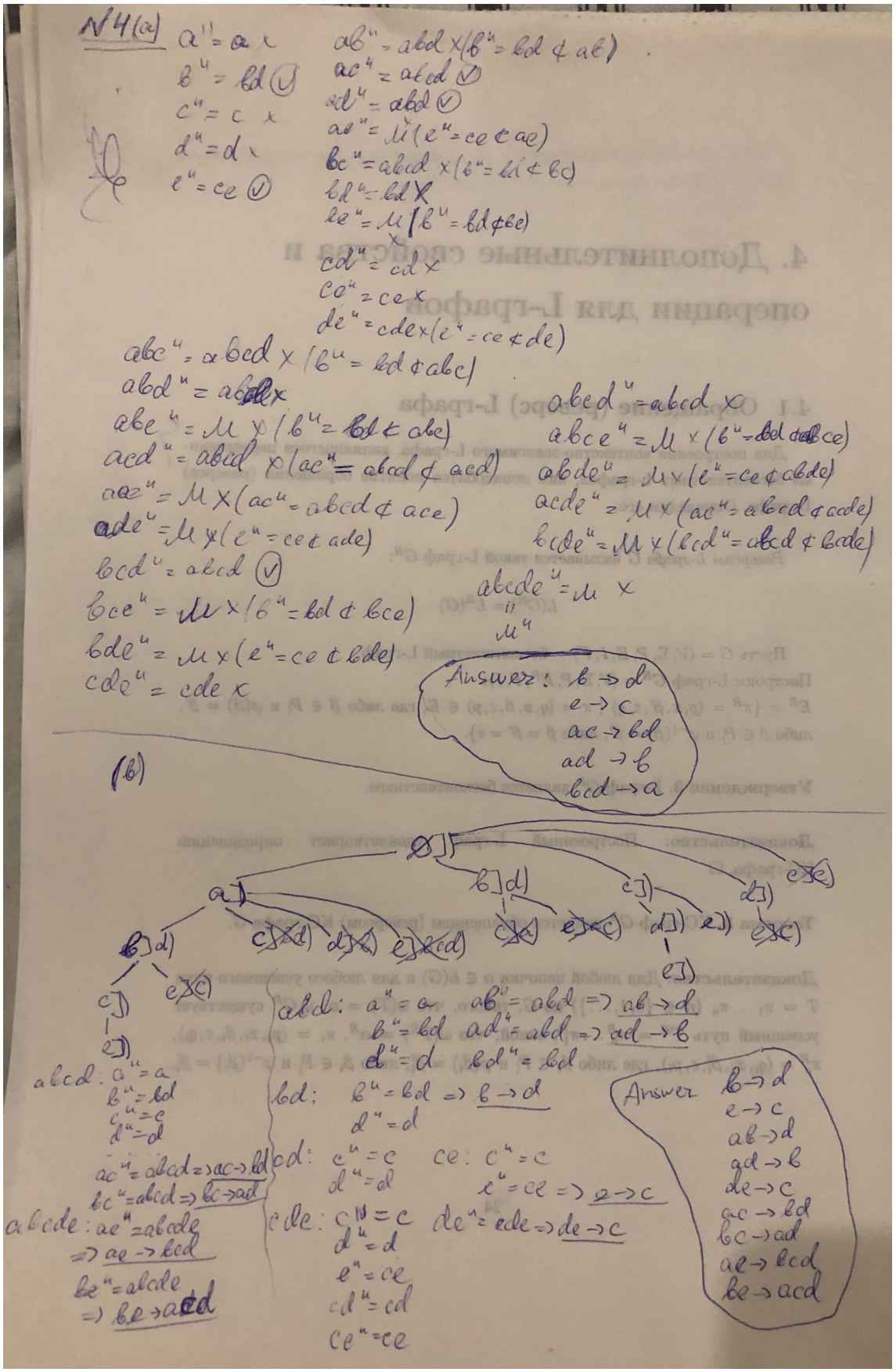
For getting $BC \to D$ use 2-nd axiom: $C \to D \Rightarrow BC \to D$.

For getting $A \to E$ use 3-rd axiom: $\{A \to C,\ C \to E\} \Rightarrow A \to E$.

For getting $AB \to D$ use 2-nd and 3-rd axioms.
3-rd axiom: $\{A \to E,\ E \to D\} \Rightarrow A \to D$;
2-nd axiom: $A \to D \Rightarrow AB \to D$.

If we remove any implication from our minimal subset then we couldn't get all needed implications.

Task 4.


№4(a)
Answer: b → d
e → c
ac → bd
ad → b
bcd → a
(b)
Answer
b → d
e → c
ab → d
ad → b
de → c
ac → bd
bc → ad
ae → bcd
be → acd