6.17

The line 8 is the problem.

The conclusion is not a consequence of the premise.

6.27

$$\begin{array}{|l} (A \wedge B) \vee (C \wedge D) \quad ① \\ (B \wedge C) \vee (D \wedge Z) \quad ② \\ \hline C \vee (A \wedge E) \end{array}$$

For the statements ① and ②, if they are true, then either $(A \wedge B)$ or $(C \wedge D)$ ~~are~~ is true and either $(B \wedge C)$ or $(D \wedge Z)$ is true.

Prove by cases

Case 1: $(A \wedge B)$ and $(B \wedge C)$ are true.

In this case, C must be true.

Then $C \vee (A \wedge Z)$ is true!

Case 2: $(A \wedge B)$ and $(D \wedge Z)$ are true.

$(A \wedge B) \Rightarrow A$ so $(A \wedge Z)$ is true.

$(Z \wedge D) \Rightarrow Z$

Then $C \vee (A \wedge Z)$ is true.

Case 3: ~~$(B \wedge C$~~ $(C \wedge D)$ and $(B \wedge C)$ are true.

since $(C \wedge D) \Rightarrow C$, so $C \vee (A \wedge Z)$ is true.

Case 4: $(C \wedge D)$ and $(D \wedge Z)$ are true.

Still, $(C \wedge D) \Rightarrow C$, so $C \vee (A \wedge Z)$ is true.

Case 5: $(A \wedge B)$ and $(C \wedge D)$ are both true and $(B \wedge C)$ and $(D \wedge Z)$ are both true or one of them are both true and the other has one true element.

Their sub cases are case 1 to 4 and have been proved.

So
$$\begin{array}{|l} (A \wedge B) \vee (C \wedge D) \\ (B \wedge C) \vee (D \wedge Z) \\ \hline C \vee (A \wedge Z) \end{array}$$

Q.E.D