

High school geometry theorems

Hilbert's axiomatic system.
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Theorem 1 (th_5c2fixstep3.01.) *Assuming that $A = B$ and $B \neq C$ and $B \in p$ and $C \in p$ it holds that $col(A, B, C)$.*

Proof:

1. From the facts $B \in p$ and $A = B$ it holds that $A \in p$.
2. From the facts $A \in p$ and $A \in p$ and $C \in p$ it holds that $col(A, A, C)$ (using *ax_D1*).
3. From the facts $col(A, A, C)$ and $A = B$ it holds that $col(A, B, C)$.
4. The conclusion follows from the fact $col(A, B, C)$.

QED
