

Answer on Question #48773 – Math – Discrete Mathematics

$$(A \Delta B) \Delta (C \Delta D) = (A \Delta D) \Delta (B \Delta C).$$

Solution.

Prove this statement by using commutativity and associativity of a symmetric difference:

$$\begin{aligned}(A \Delta B) \Delta (C \Delta D) &= ((A \Delta B) \Delta C) \Delta D = ((B \Delta A) \Delta C) \Delta D = \\&= (B \Delta (A \Delta C)) \Delta D = (B \Delta (C \Delta A)) \Delta D = B \Delta ((C \Delta A) \Delta D) = \\&= B \Delta (C \Delta (A \Delta D)) = (B \Delta C) \Delta (A \Delta D) = (A \Delta D) \Delta (B \Delta C).\end{aligned}$$