**Problem 8.** Let $A_1, A_2, \ldots, A_8$ be a permutation of the integers 

$$1, 2, 3, \ldots, 8.$$ 

Show that if the sixteen numbers 

$$9 \pm A_1, 10 \pm A_2, \ldots, 16 \pm A_8$$ 

are all distinct, then the same is true when the numbers are written in reverse order. That is, the sixteen numbers 

$$9 \pm A_8, 10 \pm A_7, \ldots, 16 \pm A_1$$ 

are also distinct.